

**Contribution Of Alaskan, Canadian, and
Transboundary Sockeye Salmon Stocks to Catches in
Southeast Alaska Purse Seine and Gillnet Fisheries,
Districts 101–108, Based On Analysis of Scale
Patterns, 2005**

by

John A. Wilcock,

Iris S. Frank,

Julie A. Bednarski,

and

Kathleen A. Jensen

June 2011

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)		General		Mathematics, statistics		
centimeter	cm	Alaska Administrative Code	AAC	all standard mathematical signs, symbols and abbreviations		
deciliter	dL	all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.	alternate hypothesis	H _A	
gram	g	all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.	base of natural logarithm	<i>e</i>	
hectare	ha			catch per unit effort	CPUE	
kilogram	kg	at	@	coefficient of variation	CV	
kilometer	km			common test statistics	(F, t, χ^2 , etc.)	
liter	L	compass directions:		confidence interval	CI	
meter	m	east	E	correlation coefficient (multiple)	R	
milliliter	mL	north	N	correlation coefficient (simple)	r	
millimeter	mm	south	S	covariance	cov	
Weights and measures (English)		west	W	degree (angular)	°	
	cubic feet per second	ft ³ /s	copyright	©	degrees of freedom	df
	foot	ft	corporate suffixes:		expected value	<i>E</i>
	gallon	gal	Company	Co.	greater than	>
	inch	in	Corporation	Corp.	greater than or equal to	≥
	mile	mi	Incorporated	Inc.	harvest per unit effort	HPUE
	nautical mile	nmi	Limited	Ltd.	less than	<
	ounce	oz	District of Columbia	D.C.	less than or equal to	≤
	pound	lb	et alii (and others)	et al.	logarithm (natural)	ln
	quart	qt	et cetera (and so forth)	etc.	logarithm (base 10)	log
yard	yd	exempli gratia		logarithm (specify base)	log ₂ , etc.	
Time and temperature		(for example)	e.g.	minute (angular)	'	
	day	d	Federal Information Code		not significant	NS
	degrees Celsius	°C	id est (that is)	i.e.	null hypothesis	H ₀
	degrees Fahrenheit	°F	latitude or longitude	lat. or long.	percent	%
	degrees kelvin	K	monetary symbols		probability	P
	hour	h	(U.S.)	\$, ¢	probability of a type I error	
	minute	min	months (tables and figures): first three		(rejection of the null hypothesis when true)	α
	second	s	letters	Jan.,...,Dec	probability of a type II error	
	Physics and chemistry		registered trademark	®	(acceptance of the null hypothesis when false)	β
		all atomic symbols		trademark	™	second (angular)
alternating current		AC	United States		standard deviation	SD
ampere		A	(adjective)	U.S.	standard error	SE
calorie		cal	United States of America (noun)	USA	variance	
direct current		DC	U.S.C.	United States Code	population	Var
hertz		Hz			sample	var
horsepower		hp				
hydrogen ion activity (negative log of)		pH				
parts per million		ppm	U.S. state	use two-letter abbreviations (e.g., AK, WA)		
parts per thousand	ppt, ‰					
volts	V					
watts	W					

FISHERY DATA REPORT NO. 11-24

**CONTRIBUTION OF ALASKAN, CANADIAN, AND TRANSBOUNDARY
SOCKEYE SALMON STOCKS TO CATCHES IN SOUTHEAST ALASKA
PURSE SEINE AND GILLNET FISHERIES, DISTRICTS 101–108, BASED
ON ANALYSIS OF SCALE PATTERNS, 2005**

by
John A. Wilcock, Iris S. Frank, Julie A. Bednarski
and
Kathleen A. Jensen
Alaska Department of Fish and Game, Division of Commercial Fisheries, Douglas

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1599

June 2011

Development and publication of this manuscript were partially financed by the Federal Aid in Sport Fish Restoration Act(16 U.S.C.777-777K) under Project F-10- NA04NMF4380172

The Division of Sport Fish Fishery Data Series was established in 1987 for the publication of technically oriented results for a single project or group of closely related projects. Since 2004, the Division of Commercial Fisheries has also used the Fishery Data Series. Fishery Data Series reports are intended for fishery and other technical professionals. Fishery Data Series reports are available through the Alaska State Library and on the Internet: <http://www.sf.adfg.state.ak.us/statewide/divreports/html/intersearch.cfm> This publication has undergone editorial and peer review.

*John A. Wilcock, Iris S. Frank, Julie A. Bednarski,
and
Kathleen A. Jensen
Alaska Department of Fish and Game, Division of Commercial Fisheries,
P.O. Box 240020, Douglas, Alaska 99824,
USA*

This document should be cited as:

Wilcock, J. A., I. S. Frank, J. A. Bednarski, and K. A. Jensen. 2011. Contribution of Alaskan, Canadian, and transboundary sockeye salmon stocks to catches in Southeast Alaska purse seine and gillnet fisheries, Districts 101–108, based on analysis of scale patterns, 2005. Alaska Department of Fish and Game, Fishery Data Series No. 11-24, Anchorage.

The Alaska Department of Fish and Game (ADF&G) administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act (ADA) of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility please write:

ADF&G ADA Coordinator, P.O. Box 115526, Juneau, AK 99811-5526

U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, MS 2042, Arlington, VA 22203

Office of Equal Opportunity, U.S. Department of the Interior, 1849 C Street NW MS 5230, Washington DC 20240

The department's ADA Coordinator can be reached via phone at the following numbers:

(VOICE) 907-465-6077, (Statewide Telecommunication Device for the Deaf) 1-800-478-3648, (Juneau TDD) 907-465-3646, or (FAX) 907-465-6078

For information on alternative formats and questions on this publication, please contact:

ADF&G Division of Sport Fish, Research and Technical Services, 333 Raspberry Road, Anchorage AK 99518 (907) 267-2375.

TABLE OF CONTENTS

	Page
LIST OF FIGURES	ii
LIST OF TABLES.....	ii
LIST OF APPENDICES	ii
ABSTRACT	1
INTRODUCTION.....	1
METHODS.....	2
Commercial Harvest Information	2
Biological Data Collection and Processing	2
Digitizing of Scales	3
Data Analysis.....	4
RESULTS.....	4
National Origin of Southern Southeast Sockeye Salmon Catches	4
Stock Composition of Southern Southeast Sockeye Salmon Catches	5
District 101 Gillnet Stock Composition.....	5
District 101 Purse Seine Stock Composition	5
District 102 Purse Seine Stock Composition	5
District 103 Purse Seine Stock Composition	5
District 104 Purse Seine Stock Composition	5
District 106 and 108 Gillnet Stock Composition	5
DISCUSSION.....	6
ACKNOWLEDGMENTS	6
REFERENCES CITED	7
FIGURES AND TABLES.....	11
APPENDICES	31

LIST OF FIGURES

Figure	Page
1. Fishery management districts in southern Southeast Alaska and northern British Columbia waters.....	12
2. Major sockeye salmon systems of Southeast Alaska sampled for scales used in scale pattern analysis stock discrimination studies, 2005.	13
3. The Canadian Nass and Skeena Rivers and the transboundary Stikine River.	14
4. Typical scales with two and one freshwater growth zones showing the zones used for scale pattern analysis.	15

LIST OF TABLES

Table	Page
1. Estimated sockeye salmon contributions by nation of origin to southern Southeast Alaska Districts 101–108 net fisheries, 1982–2005.	16
2. Estimated contribution by stock group of origin of sockeye salmon harvested in commercial net fisheries in Alaska Districts 101–108, 2005.	19
3. Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 101 (Tree Point) drift gillnet fishery, 2005.	20
4. Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 101 purse seine fishery, 2005.	22
5. Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 102 purse seine fishery, 2005.	23
6. Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 103 purse seine fishery, 2005.	24
7. Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 104 purse seine fishery, 2005.	25
8. Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 106 drift gillnet fishery, 2005.	26
9. Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 108 drift gillnet fishery, 2005.	28

LIST OF APPENDICES

Appendix	Page
A. Scale measurement and count characters calculated from intercirculus distances and evaluated for use in linear discriminant function analysis.	32
B. Scale variables with associated entry F-statistics, and classification matrices for age-specific linear discriminant models used to classify sockeye salmon commercial catches in the District 101 gillnet fishery, and Districts 101–103 purse seine fisheries, 2005.	33
C. Scale variables with associated entry F-statistics, and classification matrices for age-specific linear discriminant models used to classify sockeye salmon commercial catches in the District 104 purse seine fishery, 2005.	34
D. Scale variables with associated entry F-statistics, and classification matrices for age-specific linear discriminant models used to classify sockeye salmon commercial catches in the Districts 106 and 108 drift gillnet fisheries, 2005.	35

ABSTRACT

Sockeye salmon (*Oncorhynchus nerka*) harvested in southern Southeast Alaska's 2005 gillnet and purse seine fisheries were classified to nation and/or stock group of origin using linear discriminant function analysis of scale patterns and age composition data. Measurements of spacing between circuli were used to characterize stock-specific differences in scale patterns, and were measured using image processing techniques on digital images of scales. A total of 980,460 sockeye salmon harvested in purse seine and gillnet fisheries in 2005 was very similar to the 1982–2003 average of 1.08 million annually. This catch was classified to nation of origin to estimate that 252,849 fish (25.8%) were of Alaska origin, 624,420 fish (63.7%) were of Canadian origin, and 103,191 fish (10.5%) were of Stikine River (transboundary) origin.

Key words: sockeye salmon, *Oncorhynchus nerka*, stock composition, linear discriminant function, scale pattern analysis, image processing, Southeast Alaska, Canada, Boundary Area

INTRODUCTION

Sockeye salmon (*Oncorhynchus nerka*) harvested in southern Southeast Alaskan commercial fisheries include drift gillnet fisheries that target primarily sockeye salmon in Alaska Districts 101, 106 and 108, as well as purse seine fisheries in Alaska Districts 101 through 104 that primarily target other species and harvest sockeye salmon only incidentally. These sockeye salmon stocks originate from numerous rivers in Southeast Alaska and British Columbia (Figure 1). The rivers can be entirely contained within Alaskan or Canadian boundaries, or if they cross an international border they are referred to as transboundary rivers (Rich and Morton 1930; Verhoven 1952; Norenberg 1959; Logan 1967; Simpson 1968; Hoffman et al. 1983).

Sockeye salmon that spawn in rivers entirely within Alaskan borders originate primarily from numerous low to moderately productive systems in the immediate vicinity (Figure 2). Sockeye salmon from drainages entirely within Canadian borders originate principally from the Nass River, which flows into Portland Canal, and from the Skeena River, which flows into Chatham Sound, just south of the Alaska-Canada border (Figure 3). These harvests may also include a few sockeye salmon bound for northern Southeast Alaska, Prince William Sound, and Washington State, but their low numbers preclude estimates of stock of origin. In some years, migration patterns change for sockeye salmon from southern British Columbia, and increased numbers are caught in the Alaska District 104 purse seine fishery along the outer coast of Alaska and just north of the Alaska-Canada border. These fish are thought to originate primarily from the Fraser River. Several transboundary river systems contribute to sockeye salmon catches in Southeast Alaska, including the Taku, Stikine, and Alsek Rivers. In southern Southeast Alaska, the District 108 and 106 gillnet fisheries are the only ones that regularly harvest transboundary river sockeye stocks in quantifiable numbers, primarily stocks from the Stikine River drainage.

In 1982, the Alaska Department of Fish and Game began using scale pattern analysis (Marshall et al., 1984) to estimate the numbers of salmon bound for specific Canadian river systems. Scale pattern analysis is based on differences in patterns of arrangement of circuli on scales, which reflect average differences in fish growth history over broad geographic areas. Significant and persistent differences between sockeye salmon stock groups originating in Alaska and Canada have been documented in the patterns of scale growth during freshwater and early marine life history (Oliver et al. 1984; Oliver and Walls 1985; Oliver and Jensen 1986; Oliver et al. 1987; Oliver *Unpublished Report*; Oliver and Farrington 1989; Oliver et al. 1990; Farrington and Oliver 1994; Farrington et al. 1996a–c; Farrington et al. 1998a–b; Farrington et al. 1999a–b; Bloomquist et al. 2005 and 2010.).

The purpose of this study is to determine the national origin of major sockeye salmon stocks contributing to commercial gillnet and purse seine fishery catches in southern Southeast Alaska (Figure 1). Under the Pacific Salmon Treaty of 1985 and its later annexes, catches by fishermen of either country of their neighboring country's stocks are restricted in selected fisheries. In particular, the catch of Nass and Skeena sockeye salmon in Alaska District 101 gillnet and District 104 purse seine fisheries are limited, over a ten-year period, to a percentage of the total return of these stocks. Annual stock-specific run reconstructions (catch plus escapement) are required to accurately estimate relative contribution of each stock caught in these restricted fisheries. Estimates of national origin of contributing stocks from this study provide the most reliable information currently available to complete these run reconstructions, and are used to evaluate stock-specific productivity and to revise pre-season forecasts.

METHODS

COMMERCIAL HARVEST INFORMATION

The number of fish harvested by gear type, district, and week were obtained from an ADF&G statewide commercial harvest database of commercial salmon sales receipts dating back to 1960. Catches were summarized by statistical weeks (weeks), which began on Sunday at 12:01 a.m. and ended the following Saturday at midnight. These weeks were numbered sequentially starting from the beginning of the calendar year.

BIOLOGICAL DATA COLLECTION AND PROCESSING

ADF&G Division of Commercial Fisheries personnel collected biological information and scales of sockeye salmon from southern Southeast Alaska commercial gillnet and purse seine landings at fish processing facilities in Petersburg, Ketchikan, Craig, and Wrangell. A sample size of 520 fish per stratum was sufficient to describe the estimated sockeye salmon age composition with a precision of $\pm 5\%$ and a probability of 0.10 (Thompson 1987). Technicians collected samples from multiple vessels and tenders for each district. Samples were collected throughout unloading, selecting no more than 40 fish from any single delivery. Deliveries containing catches mixed from more than one gear type or more than one district were not sampled.

Gender was determined visually from external physical characteristics and recorded for each fish sampled. Mid-eye to fork-of-tail length was recorded for 25% of the fish sampled, except for District 101 and District 104 where length was recorded for all fish sampled. Scales were taken from the preferred area above the lateral line on the left side of the fish on a diagonal downward from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin (INPFC 1963).

ADF&G Division of Commercial Fisheries personnel collected scales from a variety of major sockeye salmon escapement lake and stream systems in southern Southeast Alaska. In northern British Columbia, Department of Fisheries and Oceans Canada (DFO) personnel collected scales from daily gillnet catches in test fisheries operating near or in the lower reaches of the Skeena River. LGL Ltd. personnel under contract to the Nisga'a First Nation in British Columbia, Canada, collected scales from daily fishwheel catches in test fishery in the lower Nass River. The Pacific Salmon Commission (PSC) provided scales from commercial net fishery catches in British Columbia and Washington State waters that were used to represent south migrating stocks.

Scales were mounted on gum cards and impressions made in cellulose acetate (Clutter and Whitesel 1956). Scales were examined under moderate (70x) magnification to determine age.

Criteria used to assign ages were similar to those of Mosher (1968), and ages were reported in European notation (Koo 1962).

DIGITIZING OF SCALES

Counts and measurements were made on a selected radius along or near the longest axis of the scale (Figure 4) (Anas and Murai 1969). Measurements and counts were collected along this axis line from the scale focus to end of the first marine annular zone. Methods used in 2005 to measure fish growth characteristics from scale circuli were based on image analysis techniques, which have been used since 2003. Prior methods projected scale impressions onto a digitizing tablet at 100x magnification to obtain measurements using equipment similar to that described by Ryan and Christie (1976).

Beginning in 2003, scale impressions were projected onto the screen of a ScreenScan^{®1} Model PC scanning microfiche reader at 42x magnification, similar to equipment described by Hagen et al. (2001). The projected image was digitally rendered using ScreenScan[®] image capture software, and each scale image stored as a single Tagged Image File Format (TIFF) file. Image files representing scales from district and weekly strata, and from escapement locations, were stored in computer directories organized according to collection location and week.

Images files were processed using Optimate[®] 6.51 image analysis software running customized macros developed specifically for measuring salmon scales. Macros used to process sockeye salmon for these studies were written in the Optimas[®] proprietary programming language ALI, and were modified from routines originally developed by Hagen et al. (2001). ALI code for the modified macros is documented in the detailed project operational plan for the Southeast Alaska regional scale lab in Douglas, Alaska.

The scale image processing macro permitted the scale reader to use a series of mouse clicks and key commands to extract circuli measurement data within growth pattern zones from each scale image file. Images were processed in the following sequence:

1. Open an image file.
2. Using successive mouse clicks, establish location of an axis line by setting a rubber band line start point in the visual center of the scale focus, and end point a few circuli beyond the first marine annulus.
3. Manually place a marker for each growth zone with a mouse click along the axis line, a short distance beyond the outside edge of the last circulus of each zone.
4. Invoke an edge detection algorithm to automatically identify and mark the intersection of the leading edge of each circulus with the transect line.
5. Manually adjust circulus markers placed incorrectly due to natural variations in scale circuli and poor image quality.
6. Calculate distance measurements between each adjacent circulus and append zone indicator codes and distance measurements to a specified comma delimited text file.

¹ Product names used in this report are included for scientific completeness, but do not constitute product endorsement.

DATA ANALYSIS

Linear discriminant function (LDF) analysis (Fisher 1936) of scale patterns has been used to estimate stock contributions to southern Southeast Alaska mixed stock sockeye salmon fisheries based on observed differences between stocks since 1982 (Oliver et al. 1984; Oliver and Walls 1985; Oliver and Jensen 1986; Oliver et al. 1987; Oliver *Unpublished Report*; Oliver and Farrington 1989; Oliver et al. 1990; Farrington and Oliver 1994; Farrington et al. 1996a–c; Farrington et al. 1998a–b; Farrington et al. 1999a–b; Bloomquist et al. 2005 and 2010.).

Age-specific LDF models for each gear type and District were assembled for the three distinct geographic areas (Appendices B–D) from 2005 escapement samples based on stock-specific migration patterns observed in tagging studies from the early 1980s (Hoffman et al. 1983, English et al. 1984). Construction of separate age-specific models from potential contributing stock groups within the Districts 106 and 108 gillnet fisheries also considered observed run timing differences (K. A. Jensen, Commercial Fishery Research Biologist, ADF&G, Douglas; personal communication).

Weekly commercial catches in each district were classified to potential contributing stocks using age-specific LDF models for four major age groups (1.2, 1.3, 2.2 and 2.3) that generally comprise more than 98% of commercial catches. Up to 100 scales per temporal stratum for each major age class in a district and fishery were analyzed to provide estimates of stock proportions with a precision of $\pm 10\%$ with probability of 0.10. The stock apportionment of the other (minor) age classes not directly classified using LDF assumes that the proportion of the minor ages belonging to any given stock is equal to the combined proportion of all classified age classes. Age specific models were used in the analysis to 1) account for differences in age composition between stocks, 2) remove potential bias due to differences in migratory timing of different aged fish and 3) eliminate the effect of different environmental conditions on the scale patterns of different age fish. Stock contributions were estimated for each week to track temporal patterns. Stock contribution estimates for weekly district catches for which no scale samples were collected (primarily early and late in the season) were generally approximated using the age and stock composition results from the nearest temporal stratum for that district. Stock contribution estimates for catches from districts for which few samples were available for relatively small catches over a period of weeks, were approximated using stock composition results from an adjacent temporal stratum to estimate pooled catch contributions for the weekly catches.

Variances of weekly and seasonal stock composition estimates were approximated with the delta method (Seber 1982). Variance estimates were functions of the variances associated with the weekly: 1) estimated age composition of the catch, 2) age specific stock composition estimates, 3) sample size of the age composition, and 4) catch size. Use of a maximum likelihood procedure to constrain the stock proportion estimates did provide a variance estimate for stock(s) contributing zero fish.

RESULTS

NATIONAL ORIGIN OF SOUTHERN SOUTHEAST SOCKEYE SALMON CATCHES

The total sockeye salmon harvest in the southern Southeast Alaska (Districts 101–108) seine and gillnet fisheries was 980,460 fish in 2005. Catches from these net fisheries were classified by nation of origin (Table 1). The estimated U.S. contribution was 252,849 fish (25.8%), estimated Canadian contribution was 624,420 fish (63.7%), and estimated transboundary contribution was 103,191 fish (10.5%).

STOCK COMPOSITION OF SOUTHERN SOUTHEAST SOCKEYE SALMON CATCHES

The total number of sockeye salmon classified to stock group of origin was 980,460 fish (Table 2). Of these, it was estimated that 252,849 fish (25.8%) were of U.S. origin; 151,493 fish (15.5%) were Nass River origin; 178,671 (18.2%) were Skeena River origin; 294,256 (30%) were south-migrating stock origin (primarily Fraser River); 50,090 (5.1%) were transboundary Tahltan Lake origin; 27,118 (2.8%) were transboundary Stikine River origin; and 25,984 (2.7%) were transboundary Tuya Lake origin.

District 101 Gillnet Stock Composition

Weekly stock composition estimates comprised Alaska, Nass, and Skeena stock groupings. Of the season catch of 79,725 sockeye salmon, the estimated stock contributions were: 12,660 fish from the Alaska stock grouping for 15.9% of the total; 55,770 Nass River fish (70%); and 11,294 Skeena River fish (14.2%) (Table 3). Nass was the largest stock component in all weekly strata.

District 101 Purse Seine Stock Composition

Weekly and stock composition estimates comprised Alaska, Nass, and Skeena stock groupings. The season catch total was 81,020 sockeye. The estimated stock contributions were 46,164 fish from the Alaska stock grouping (57%), 14,261 Nass River fish (17.6%), and 20,595 Skeena River fish (25.4%) (Table 4). Alaska was the largest stock component in all weekly time strata, except the first week of the season, when Nass was the largest component.

District 102 Purse Seine Stock Composition

Where possible weekly stock composition estimates were made for Alaska, Nass, and Skeena stock groupings. Of the catch of 39,610 sockeye salmon caught over the entire season (weeks 27–38), the estimated stock contributions were: 31,735 fish from the Alaska stock grouping (80.1%); 3,398 Nass River fish (8.6%); and 4,477 Skeena River fish (11.3%) (Table 5). Because landings for this district are frequently mixed with catches from other districts, stock contribution estimates for most weekly strata were approximated using district-specific samples collected successfully during only 4 weeks of the fishery.

District 103 Purse Seine Stock Composition

Sockeye salmon harvested in the District 103 purse seine fishery totaled 48,594 fish. The estimates for contributions by stock group were: 33,365 (68.7%) from Alaska, 5,227 (10.8%) from Nass, and 10,001 (20.6%) from Skeena (Table 6). Stock composition estimates for the earliest and latest weeks for this district were approximated using samples from adjacent weekly strata.

District 104 Purse Seine Stock Composition

Weekly stock compositions comprised Alaska, Nass, Skeena, and south-migrating groupings. Of the season total of 521,854 sockeye salmon caught, the estimated stock contributions were: 67,997 fish from the Alaska stock grouping (13%); 43,846 Nass River fish (8.4%); 115,755 Skeena River fish (22.2%); and 294,256 (56.4%) fish from the south-migrating stock grouping (Table 7).

District 106 and 108 Gillnet Stock Composition

A total of 110,192 sockeye salmon were caught in the District 106 gillnet fishery (Table 8), and 99,465 sockeye salmon in the District 108 gillnet fishery (Table 9). Alaska stocks contributed

51,735 sockeye (46.9%) to the District 106 gillnet fishery and 9,193 sockeye (9.2%) to the District 108 gillnet fishery. Canadian stocks contributed 34,464 (31.3%) fish to the District 106 gillnet fishery and 11,074 (11.1%) fish to District 108 gillnet. Transboundary stocks contributed 23,993 (21.8%) fish to District 106 gillnet and 79,198 (79.6%) fish to the District 108 gillnet fishery.

DISCUSSION

The total sockeye salmon harvest in the southern Southeast Alaska (Districts 101–108) seine and gillnet fisheries in 2005 (980,460) was slightly below the 1982–2004 average annual harvest of 1,075,534 sockeye salmon and was slightly above the 2004 harvest of 905,563 sockeye salmon (Table 1). Catch in District 102 purse seine was similar to the 1982–2004 average. Catches in Districts 103 purse seine and 108 gillnet fishery were greater than the 1982–2004 averages. In Districts 101 gillnet and purse seine fisheries, District 104 purse seine fishery and District 106 gillnet fishery were below the 1982–2004 average.

Catch in District 103 purse seine fishery (48,594) in 2005 was the second largest harvest between 1982 and present with an average annual harvest 19,119 fish. The estimated contribution of Canadian stocks was 8% above the 1982–2004 average.

Catch in District 104 purse seine fishery (521,854) was the highest catch since 2001 (562,634). The estimated contribution of Canadian stocks was 10% above the 1982–2004 average.

Catch in District 106 gillnet fishery (110,192) harvest was below the 1982–2004 average (155,031). The estimated contribution of transboundary stocks was 9% above the 1982–2004 average and the estimated contribution of Canadian stocks was 5% above the 1982–2004 average.

Catch in District 108 gillnet fishery (99,465) in 2005 was above the 1982–2004 average (43,358). This district experienced several years of low abundance and non-harvests in the mid 1980s, as well as low abundance and very low harvests in 2001 and 2002. The estimated contribution of transboundary stocks was 17% above the 1982–2004 average.

ACKNOWLEDGMENTS

Scales and biological data used in these analyses were collected by ADF&G, Division of Commercial Fisheries port sampling crews in Ketchikan, Craig, Wrangell, and Petersburg under the direction of Glenn Hollowell and Joseph Stratman. Department of Fisheries and Oceans Canada personnel in Prince Rupert, under the direction of Steve Cox-Rogers, provided scales and biological data for sockeye salmon from the Nass and Skeena River test fisheries. Peter Etherton, with the Department of Fisheries and Oceans Canada in Whitehorse, directed technical staff that provided scales and biological data for sockeye salmon from the Stikine River. Steve Latham from the Pacific Salmon Commission in Vancouver, B.C., provided scales and biological data from Fraser River and Johnstone Strait test fisheries. Renate Riffe provided valuable editorial comments and review of early drafts. Field collection of scale samples and data is supported through a wide variety of US and Canadian projects working under the auspices of the Pacific Salmon Commission. Additional support to complete technological updates and revisions to analytical systems was provided specifically for this purpose through the Southeast Sustainable Salmon Fund.

REFERENCES CITED

- Anas, R. E., and S. Murai. 1969. Use of scale characters as a discriminant function for classifying sockeye salmon (*Oncorhynchus nerka*) by continent of origin. International North Pacific Fisheries Commission, Bulletin 26:157–192.
- Bloomquist, R., A. M. Reynolds, and I. S. Frank. 2005. Contribution of Alaskan, Canadian, and transboundary sockeye salmon stocks to catches in Southeast Alaska purse seine and gillnet fisheries, Districts 101–108, based on analysis of scale patterns, 1998. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J02-40, Juneau.
- Bloomquist, R., A.M. Reynolds, and I. S. Frank. 2010. Contribution of Alaskan, Canadian, and transboundary sockeye salmon stocks to catches in Southeast Alaska purse seine and gillnet fisheries, Districts 101–108, based on analysis of scale patterns, 2002. Alaska Department of Fish and Game, Fishery Data Series No. 10-27, Anchorage.
- Clutter R. and L. Whitesel. 1956. Collection and interpretation of sockeye salmon scales. Bulletin International Pacific Salmon Fisheries Commission, No. 9.
- English, K. K., W. J. Gazey, and J. A. Taylor. 1984. Part C. The 1983 North Coast tagging study. [In] Gazey, W. J., and D. A. Birdsall (editors), Design and execution of a stock interception study. Draft of Unpubl. Rep. by LGL Limited and ESSA Environmental Social Systems Analysts Ltd., for Fisheries and Oceans Canada, B.C., Canada.
- Farrington, C. W. and G. T. Oliver, 1994. Contribution of Alaskan, Canadian, and transboundary sockeye stocks to 1990 catches in Southeast Alaska purse seine and gillnet fisheries, Districts 101–108, based on analysis of scale patterns. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J94-03, Juneau.
- Farrington, C. W., G. T. Oliver, and R. A. Bloomquist. 1996a. Contribution of Alaskan, Canadian, and transboundary sockeye stocks to catches in Southeast Alaska purse seine and gillnet fisheries, Districts 101–108, 1992, based on analysis of scale patterns. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J96-10, Juneau.
- Farrington, C. W., G. T. Oliver, and R. A. Bloomquist. 1996b. Contribution of Alaskan, Canadian, and transboundary sockeye stocks to catches in Southeast Alaska purse seine and gillnet fisheries, Districts 101–108, 1993, based on analysis of scale patterns. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J96-11, Juneau.
- Farrington, C. W., G. T. Oliver, and R. A. Bloomquist. 1996c. Contribution of Alaskan, Canadian, and transboundary sockeye stocks to 1993 catches in Southeast Alaska purse seine and gillnet fisheries, Districts 101–108, based on analysis of scale patterns. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J96-12, Juneau.
- Farrington, C. W., G. T. Oliver, and R. A. Bloomquist. 1998a. Contribution of Alaskan, Canadian, and transboundary sockeye stocks to catches in Southeast Alaska purse seine and gillnet fisheries, Districts 101–108, 1994, based on analysis of scale patterns. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J98-15, Juneau.
- Farrington, C. W., G. T. Oliver, and R. A. Bloomquist. 1998b. Contribution of Alaskan, Canadian, and transboundary sockeye stocks to catches in Southeast Alaska purse seine and gillnet fisheries, Districts 101–108, 1995, based on analysis of scale patterns. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J98-16, Juneau.
- Farrington, C. W., G. T. Oliver, and R. A. Bloomquist. 1999a. Contribution of Alaskan, Canadian, and transboundary sockeye stocks to catches in Southeast Alaska purse seine and gillnet fisheries, Districts 101–108, 1996, based on analysis of scale patterns. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J99-43, Juneau.
- Farrington, C. W., G. T. Oliver, and R. A. Bloomquist. 1999b. Contribution of Alaskan, Canadian, and transboundary sockeye stocks to catches in Southeast Alaska purse seine and gillnet fisheries, Districts 101–108, 1997, based on analysis of scale patterns. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J99-46, Juneau.

REFERENCES CITED (Continued)

- Fisher, R. 1936. The use of multiple measurements in taxonomic problems. *Ann. Eugenica* 7:179–188.
- Hoffman, S., L. Talley, and M. C. Seibel. 1983. 1983 chum and sockeye tagging, interception rates, migration patterns, run timing, and stock intermingling research in southern Southeast Alaska and northern British Columbia. Alaska Department of Fish and Game, Technical Data Report 110. Juneau.
- INPFC (International North Pacific Fisheries Commission). 1963. Annual Report 1961.
- Hagen, Peter, David Meerburg, Katherine Myers, Alexander Rogatnykh, Shigehiko Urawa, and Eric Volk. 2001. Workshop on salmonid otolith marking. North Pacific Anadromous Fish Commission, Technical Report 3, Vancouver, British Columbia.
- Koo, T. S. Y. 1962. Age designation in salmon. Pages 37–48 [In] T. S. Y. Koo, editor, *Studies of Alaska red salmon*. University of Washington Press, Seattle.
- Logan, R. 1967. The Noyes Island salmon fishing conflict. *British Columbia Geographic Series, Occasional Paper* 8:18–26.
- Marshall, S. L., G. T. Oliver, D. R. Bernard, and S. A. McPherson. 1984. Accuracy of scale pattern analysis in separating major stocks of sockeye salmon (*Oncorhynchus nerka*) from southern Southeastern Alaska and northern British Columbia. Alaska Department of Fish and Game, Informational Leaflet 230, Juneau.
- Mosher, K. H. 1968. Photographic atlas of sockeye salmon scales. *Fishery Bulletin* 67(2):243–279.
- Norenberg, W. 1959. Salmon migrations in Southeastern Alaska. U.S. Fish and Wildlife Service, Circular No. 59.
- Oliver, G. T. *Unpublished Report*. Contribution of Alaskan, Canadian, and Transboundary sockeye stocks to catches in Southeast Alaska Purse Seine and gillnet fisheries, Districts 101–108, 1987, based on analysis of scale patterns. Alaska Department of Fish and Game, Division of Commercial Fisheries, Juneau.
- Oliver, G., S. Marshall, D. Bernard, S. McPherson, and S. Walls. 1984. Estimated contribution from Alaska and Canada stocks to the catches of sockeye salmon in southern Southeast Alaska, 1982 and 1983 based on scale pattern analysis. Alaska Department of Fish and Game, Division of Commercial Fisheries, Technical Data Report 137, Juneau.
- Oliver, G. and S. Walls. 1985. Estimated contribution from Alaska and Canada stocks to the catches of sockeye salmon in southern Southeast Alaska, 1984, based on the analysis of scale patterns. Section report in 1985 salmon research conducted in southeast Alaska by the Alaska Department of Fish and Game in Conjunction with the National Marine Fisheries Service Auke Bay Laboratory for Joint U.S./Canada interception studies. Alaska Department of Fish and Game, Division of Commercial Fisheries, Contract Report WASC 84 00179.
- Oliver, G. T. and K. A. Jensen. 1986. Estimated contribution of Alaskan, Canadian, and Transboundary stocks to the catches of sockeye salmon in southern Southeast Alaska, 1985, based on analysis of scale patterns. Section report in 1985 salmon research conducted in southeast Alaska by the Alaska Department of Fish and Game in Conjunction with the National Marine Fisheries Service Auke Bay Laboratory for Joint U.S./Canada interception studies. Alaska Department of Fish and Game, Division of Commercial Fisheries, Contract Report 85 ABC 00142.
- Oliver, G. T., K. Jensen, I. Frank, and N. Sands. 1987. Contribution of Alaskan, Canadian, and transboundary sockeye stocks to catches from Southeast Alaska Districts 101–108, 1986, based on analysis of scale patterns. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J87-07, Juneau.
- Oliver, G. T. and C. W. Farrington. 1989. Contribution of Alaskan, Canadian, and Transboundary sockeye stocks to catches in Southeast Alaska Purse Seine and gillnet fisheries, Districts 101–108, 1988, based on analysis of scale patterns. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J89-45, Juneau.

REFERENCES CITED (continued)

- Oliver, G. T., C. W. Farrington, and B. V. Alen. 1990. Contribution of Alaskan, Canadian, and transboundary sockeye stocks to catches in Southeast Alaska Purse Seine and gillnet fisheries, Districts 101–108, 1989, based on analysis of scale patterns. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 1J90-29, Juneau.
- Rich, W. and F. Morton. 1930. Salmon-tagging experiments in Alaska, 1927–1928. U. S. Bureau of Fisheries Bulletin 45:1–23.
- Ryan, P. and M. Christie. 1976. Scale reading equipment. Fisheries and Marine Service, Canada Technical Report no. PAC/T 758.
- Simpson, L. 1968. Sockeye salmon migratory behavior and biological statistics collection, Southeastern Alaska. Annual Progress Report, 1 July, 1967 to 30 June, 1968. Anadromous Fish Act (P. L. 89–304), Project No. AFC-2–2.
- Thompson, S. K. 1987. Sample size for estimating multinomial proportions. The American Statistician 41:1:62–46.
- Verhoven, L. *Unpublished manuscript*. A report to the salmon fishing industry of Alaska on the results of the 1947 tagging experiments, 1952. Fisheries Research Institute, University of Washington, Seattle.

FIGURES AND TABLES

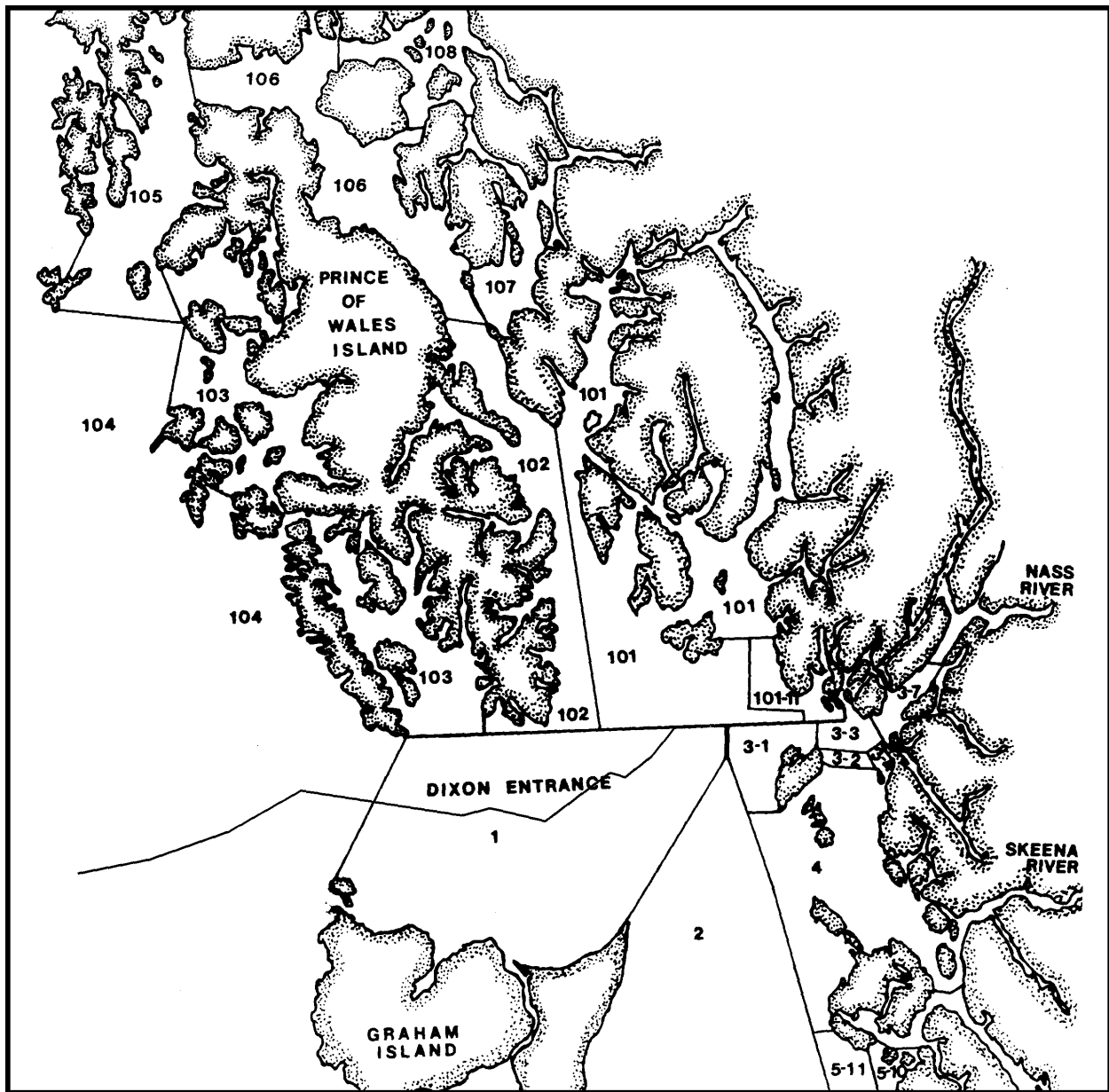


Figure 1.—Fishery management districts in southern Southeast Alaska and northern British Columbia waters.



Figure 2.—Major sockeye salmon systems of Southeast Alaska sampled for scales used in scale pattern analysis stock discrimination studies, 2005.

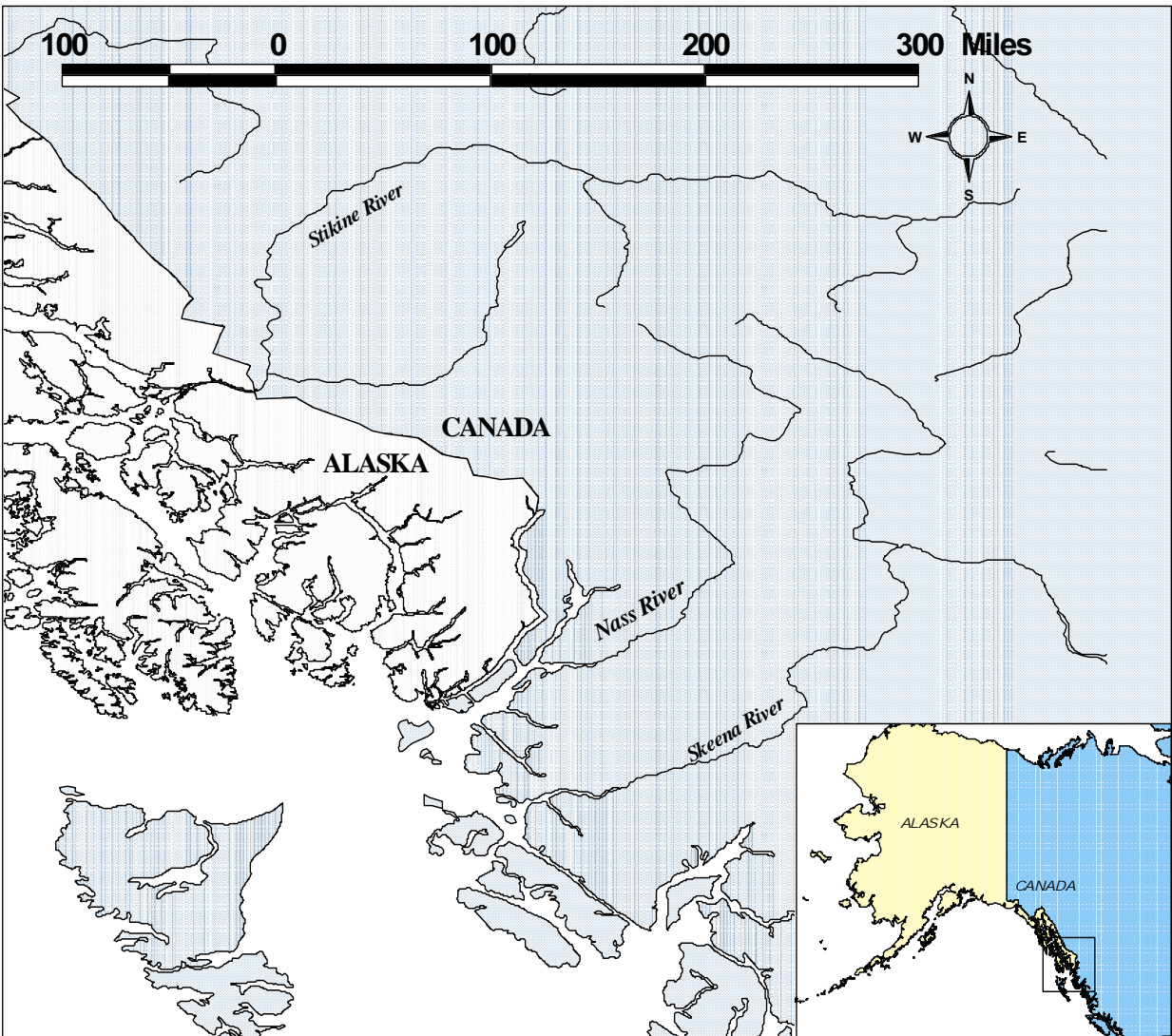


Figure 3.—The Canadian Nass and Skeena Rivers and the transboundary Stikine River.

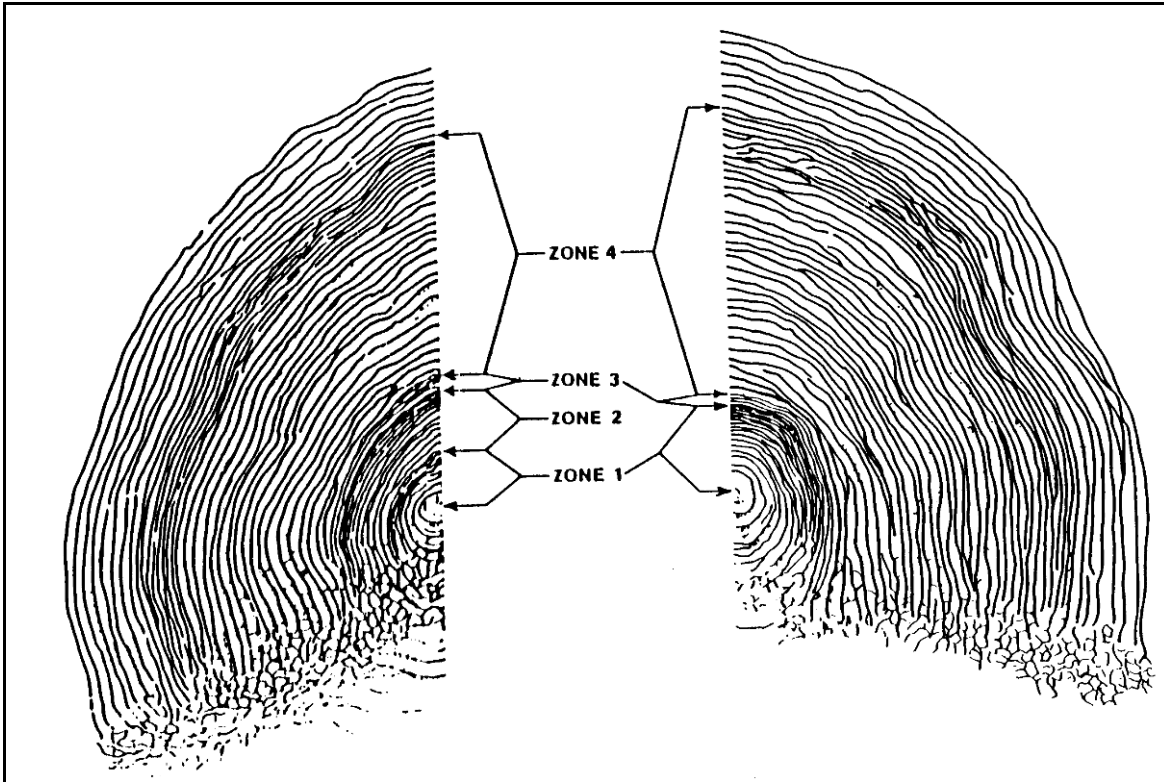


Figure 4.—Typical scales with two and one freshwater growth zones showing the zones used for scale pattern analysis.

Table 1.—Estimated sockeye salmon contributions by nation of origin to southern Southeast Alaska Districts 101–108 net fisheries, 1982–2005.

District	Type	Stock Group	1982 (%)		1983 (%)		1984 (%)		1985 (%)		1986 (%)		1987 (%)		1988 (%)		1989 (%)		1990 (%)	
101	Gillnet	US	69,483	36	48,905	36	34,843	39	30,946	18	12,738	9	25,073	23	14,796	13	31,406	22	13,862	16
		Canada	121,325	64	86,998	64	53,588	61	142,154	82	132,961	91	82,430	77	101,319	87	113,530	78	71,829	84
		Total	190,808		135,903		88,431		173,100		145,699		107,503		116,115		144,936		85,691	
101 ^a	Purse Seine	US	39,518	56	20,376	43	49,348	60	82,311	69	50,313	67	30,071	69	12,799	41	37,236	32	29,498	51
		Canada	30,941	44	27,263	57	32,537	40	37,159	31	24,510	33	13,233	31	18,340	59	80,622	68	27,809	49
		Total	70,459		47,639		81,885		119,470		74,823		43,304		31,139		117,858		57,307	
102	Purse Seine	US	18,672	80	6,482	59	17,857	82	28,417	78	24,030	73	16,211	94	10,347	70	35,807	62	38,384	75
		Canada	4,542	20	4,498	41	3,808	18	7,887	22	8,681	27	1,064	6	4,455	30	21,834	38	12,838	25
		Total	23,214		10,980		21,665		36,304		32,711		17,275		14,802		57,641		51,222	
103	Purse Seine	US			7,098	68			19,560	74	9,883	72	1,401	98	790	33	20,551	96	14,226	74
		Canada			3,357	32			6,703	26	3,806	28	34	2	1,587	67	936	4	5,124	26
		Total			10,455				26,263		13,689		1,435		2,377		21,487		19,350	
104	Purse Seine	US	106,786	38	155,967	24	78,954	27	94,005	22	101,121	23	68,647	40	104,042	18	73,026	14	123,420	15
		Canada	176,572	62	487,301	76	215,208	73	337,648	78	343,550	77	102,332	60	487,243	82	443,575	86	673,378	85
		Total	283,358		643,268		294,162		431,653		444,671		170,979		591,285		516,601		796,798	
106	Gillnet	US	94,320	49	32,583	67	60,597	66	126,914	48	100,268	69	112,893	83	80,868	87	126,603	66	112,983	61
		Canada	62,063	32	10,582	22	24,755	27	111,017	42	42,756	29	21,190	15	9,784	11	59,959	31	68,921	37
		Transboundary	37,418	19	5,580	11	6,787	7	27,056	10	2,685	2	2,344	2	1,877	2	6,172	3	3,901	2
		Total	193,801		48,842		92,139		264,987		145,709		136,427		92,529		192,734		185,805	
108	Gillnet	US	1,784	25							930	22			265	21	1,180	12	4,576	40
		Canada	4,139	58							73	2			48	4	545	5	1,479	13
		Transboundary	1,213	17							3,184	76			933	75	8,358	83	5,519	48
		Total	7,136								4,185				1,246		10,083		11,574	
Total		US	330,562	43	271,411	30	241,599	42	382,152	36	299,284	35	254,296	53	223,907	27	325,809	31	336,949	28
		Canada	399,583	52	619,998	69	329,896	57	642,569	61	556,336	64	220,283	46	622,776	73	721,001	68	861,378	71
		Transboundary	38,631	5	5,580	1	6,787	1	27,056	3	5,869	1	2,344	1	2,810	0	14,530	1	9,420	1
		Total	768,776		896,989		578,282		1,051,777		861,489		476,923		849,493		1,061,340		1,207,747	

-continued-

Table 1.–Page 2 of 3.

District	Type	Stock Group	1991 (%)		1992 (%)		1993 (%)		1994 (%)		1995 (%)		1996 (%)		1997 (%)		1998 (%)		1999 (%)	
101	Gillnet	US	13,599	10	49,771	20	42,337	11	14,008	14	13,056	8	29,745	14	32,028	19	15,884	10	15,030	9
		Canada	117,893	90	194,878	80	351,761	89	86,369	86	151,238	92	182,658	86	137,446	81	144,622	90	144,998	91
		Total	131,492		244,649		394,098		100,377		164,294		212,403		169,474		160,506		160,028	
101 ^a	Purse Seine	US	34,193	57	83,065	74	246,662	75	18,991	33	63,279	29	396,178	89	84,519	80	47,485	67	77,174	88
		Canada	26,227	43	28,954	26	83,820	25	39,100	67	154,699	71	47,653	11	21,691	20	22,916	33	10,420	12
		Total	60,420		112,019		330,482		58,091		217,978		443,831		106,210		70,401		87,594	
102	Purse Seine	US	32,413	75	30,075	90	115,916	94	18,521	65	56,518	77	60,026	90	45,908	84	23,111	79	35,518	91
		Canada	10,841	25	3,377	10	7,991	6	10,158	35	16,907	23	6,767	10	8,503	16	6,303	21	3,591	9
		Total	43,254		33,452		123,907		28,679		73,425		66,793		54,411		29,414		39,109	
103	Purse Seine	US	13,867	74	3,277	74	37,251	74	11,242	74	7,532	74	24,009	99	24,666	82	14,873	85	7,925	100
		Canada	4,995	26	1,180	26	13,419	26	4,050	26	2,713	26	178	1	5,306	18	2,582	15	31	0
		Total	18,862		4,457		50,670		15,292		10,245		24,187		29,972		17,455		7,956	
104	Purse Seine	US	166,794	20	198,080	18	205,108	22	212,854	19	68,952	14	209,567	24	210,524	17	65,348	13	63,013	38
		Canada	683,037	80	873,959	82	740,177	78	923,284	81	428,193	86	650,872	76	1,034,156	83	421,882	87	101,844	62
		Total	849,831		1,072,039		945,285		1,136,138		497,145		860,439		1,244,680		487,230		164,857	
106	Gillnet	US	78,577	55	120,977	60	82,301	40	122,118	58	65,544	32	165,221	53	97,101	58	67,890	60	70,334	67
		Canada	47,695	33	47,207	23	69,616	34	53,683	25	116,075	56	83,271	27	45,665	27	34,811	31	9,692	9
		Transboundary	17,832	12	34,971	17	54,038	26	35,247	17	25,679	12	62,608	20	25,752	15	10,734	9	24,809	24
		Total	144,104		203,155		205,955		211,048		207,298		311,100		168,518		113,435		104,835	
108	Gillnet	US	3,116	17	8,604	16	17,758	23	31,715	33	10,374	14	15,755	10	5,381	6	2,541	12	5,263	14
		Canada	2,117	12	2,696	5	8,742	11	20,250	21	15,641	20	12,618	8	12,152	13	2,376	11	1,314	4
		Transboundary	12,754	71	41,417	79	50,374	66	45,259	47	50,741	66	125,777	82	75,506	81	17,114	78	30,024	82
		Total	17,987		52,717		76,874		97,224		76,756		154,150		93,039		22,031		36,601	
Total		US	342,560	27	493,849	29	747,333	35	429,450	26	285,255	23	900,501	43	500,127	27	237,132	26	274,257	46
		Canada	892,804	71	1,152,251	67	1,275,526	60	1,136,893	69	885,466	71	984,017	48	1,264,919	68	635,492	71	271,890	45
		Transboundary	30,585	2	76,388	4	104,412	5	80,506	5	76,420	6	188,385	9	101,258	5	27,848	3	54,833	9
		Total	1,265,950		1,722,488		2,127,271		1,646,849		1,247,141		2,072,903		1,866,304		900,472		600,980	

-continued-

Table 1.–Page 3 of 3.

District	Type	Stock Group	2000	(%)	2001	(%)	2002	(%)	2003	(%)	2004	(%)	2005	(%)
101	Gillnet	US	16,727	18	10,915	14	14,462	12	14,723	14	18,555	13	12,660	16
		Canada	77,924	82	69,126	86	105,891	88	90,540	86	123,802	87	67,065	84
		Total	94,651		80,041		120,353		105,263		142,357		79,725	
101 ^a	Purse Seine	US	71,168	56	96,511	61	16,567	64	57,046	76	74,003	59	46,164	57
		Canada	55,942	44	61,172	39	9,122	36	17,604	24	50,933	41	34,856	43
		Total	127,110		157,683		25,689		74,650		124,936		81,020	
102 ^b	Purse Seine	US	26,265	78	36,987	68	23,759	80	35,098	92	31,516	69	31,735	80
		Canada	7,305	22	17,045	32	5,908	20	3,259	8	14,044	31	7,875	20
		Total	33,570		54,032		29,667		38,357		45,560		39,610	
103 ^c	Purse Seine	US	14,240	86	11,393	42	4,670	82	18,929	77	18,390	77	33,365	69
		Canada	2,384	14	15,566	58	1,055	18	5,725	23	5,530	23	15,229	31
		Total	16,624		26,959		5,725		24,654		23,920		48,594	
104	Purse Seine	US	78,727	35	82,358	15	10,169	30	111,492	34	48,468	14	67,997	13
		Canada	148,312	65	454,276	85	24,018	70	218,226	66	300,671	86	453,857	87
		Total	227,039		536,634		34,187		329,719		349,139		521,854	
106	Gillnet	US	57,923	64	86,078	52	42,573	76	86,626	74	58,005	50	51,735	47
		Canada	21,007	23	54,512	33	5,487	10	12,527	11	25,809	22	34,464	31
		Transboundary ^d	11,146	12	23,423	14	8,075	14	17,751	15	32,445	28	23,993	22
		Total	90,076		164,013		56,135		116,904		116,259		110,192	
108	Gillnet	US	3,319	21	473	78	182	88	8,675	21	10,379	10	9,193	9
		Canada	2,025	13	60	10	25	12	4,563	11	3,131	3	11,074	11
		Transboundary	10,489	66	77	13	1	0	28,920	69	89,882	87	79,198	80
		Total	15,833		610		208		42,158		103,392		99,465	
Total		US	268,369	44	324,715	32	112,382	41	332,558	45	259,316	53	252,849	26
		Canada	314,899	52	671,757	66	151,506	56	352,445	48	523,920	32	624,420	64
		Transboundary	21,635	4	23,500	2	8,076	3	46,671	6	122,327	15	103,191	11
		Total	604,903		1,019,972		271,964		731,704		905,563		980,460	

^a Includes catches from Yes Bay (West Behm Canal) terminal area fisheries.

^b District 102 includes fish taken in terminal area fisheries after week 35.

^c District 103 estimates are average of the preceding years, except the direct estimates of 1996 and 2004.

^d Includes Stikine, Tahltan, and Tuya River spawning stock groups.

Table 2.—Estimated contribution by stock group of origin of sockeye salmon harvested in commercial net fisheries in Alaska Districts 101–108, 2005.

District	Gear Type	Stock Group	Number	Percent	Standard Error	90% Confidence Interval	
						Lower	Upper
101	Gillnet	Alaska	12,660	15.9	239	12,267	13,054
		Nass	55,770	70.0	356	55,185	56,355
		Skeena	11,294	14.2	260	10,866	11,723
		Total	79,725				
101	Purse seine	Alaska	46,164	57.0	426	45,462	46,865
		Nass	14,261	17.6	378	13,640	14,882
		Skeena	20,595	25.4	408	19,924	21,266
		Total	81,020				
102	Purse seine	Alaska	31,735	80.1	211	31,387	32,082
		Nass	3,398	8.6	187	3,091	3,705
		Skeena	4,477	11.3	158	4,217	4,738
		Total	39,610				
103	Purse Seine	Alaska	33,365	68.7	444	32,635	34,096
		Nass	5,227	10.8	360	4,635	5,820
		Skeena	10,001	20.6	420	9,311	10,692
		Total	48,594				
104	Purse seine	Alaska	67,997	13.0	3,720	61,877	74,117
		Nass	43,846	8.4	3,000	38,911	48,781
		Skeena	115,755	22.2	4,696	108,030	123,480
		South Migrating	294,256	56.4	5,695	284,887	303,625
		Total	521,854				
106	Gillnet	Alaska I	44,644	40.5	372	44,032	45,255
		Alaska II	7,091	6.4	179	6,797	7,385
		Nass	21,942	19.9	447	21,207	22,678
		Skeena	12,522	11.4	327	11,985	13,059
		Tahltan	19,750	17.9	366	19,148	20,353
		Stikine	2,505	2.3	188	2,196	2,815
		Tuya	1,738	1.6	333	1,189	2,286
		Total	110,192				
108	Gillnet	Alaska I	7,862	7.9	366.2	7,260	8,464
		Alaska II	1,331	1.3	105.5	1,157	1,504
		Nass	7,048	7.1	449.9	6,308	7,789
		Skeena	4,026	4.0	320.6	3,498	4,553
		Tahltan	30,339	30.5	775.5	29,064	31,615
		Stikine	24,612	24.7	574.9	23,666	25,558
		Tuya	24,246	24.4	929.7	22,717	25,776
		Total	99,465				
Total	Total	Alaska	252,849	25.8	3825.9	246,555	259,142
		Nass	151,493	15.5	3136.3	146,334	156,652
		Skeena	178,671	18.2	4764.2	170,834	186,508
		South Migrating	294,256	30.0	5695.4	284,887	303,625
		Tahltan	50,090	5.1	857.6	48,679	51,500
		Stikine	27,118	2.8	604.9	26,123	28,113
		Tuya	25,984	2.7	987.7	24,359	27,609
		Total	980,460				

Table 3.—Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 101 (Tree Point) drift gillnet fishery, 2005.

Dates	Stock Group	Catch By Age Class					Total	Percent	Standard Error	90% Confidence Interval	
		1.2	1.3	2.2	2.3	Other				Lower	Upper
Week 26 6/19–6/25	Alaska	810	440	11	456	80	1,797	8.2	173.9	1,511	2,083
	Nass	1,152	3,588	9,354	4,451	869	19,414	88.5	217.5	19,056	19,772
	Skeena	0	683	7	0	32	722	3.3	146.7	481	964
	Total	1,963	4,710	9,372	4,907	981	21,933				
Week 27 6/26–7/02	Alaska	36	300	324	284	17	961	7.0	94.1	806	1,116
	Nass	606	1,706	6,150	3,358	215	12,035	88.0	137.9	11,808	12,262
	Skeena	0	652	0	22	12	686	5.0	101.4	519	853
	Total	641	2,657	6,475	3,665	244	13,682				
Week 28 7/03–7/09	Alaska	167	465	138	189	15	975	17.3	49.6	893	1,056
	Nass	204	605	1,628	1,450	62	3,949	70.0	82.2	3,814	4,084
	Skeena	10	696	0	0	11	717	12.7	55.8	625	809
	Total	381	1,766	1,766	1,639	89	5,641				
Week 29 7/10–7/16	Alaska	21	559	26	167	10	782	7.3	71.7	664	900
	Nass	885	1,395	3,715	2,319	110	8,424	78.7	150.1	8,177	8,671
	Skeena	0	1,485	0	0	20	1,504	14.0	113.1	1,318	1,690
	Total	906	3,439	3,741	2,486	139	10,711				
Week 30 7/17–7/23	Alaska	298	674	48	341	6	1,368	18.4	64.1	1,262	1,473
	Nass	491	976	1,640	1,547	21	4,675	63.1	115.1	4,486	4,864
	Skeena	38	1,263	0	65	6	1,371	18.5	93.6	1,217	1,525
	Total	827	2,913	1,688	1,953	33	7,414				
Week 31 7/24–7/30	Alaska	105	1,178	169	265	8	1,724	37.5	44.5	1,651	1,797
	Nass	296	202	491	679	7	1,676	36.4	77.8	1,548	1,804
	Skeena	66	1,098	0	31	5	1,201	26.1	60.8	1,101	1,301
	Total	467	2,478	660	975	20	4,601				
Week 32 7/31–8/06	Alaska	189	1,007	95	203	0	1,494	36.0	43.6	1,422	1,566
	Nass	138	311	712	547	0	1,708	41.2	69.9	1,593	1,823
	Skeena	90	790	0	67	0	946	22.8	47.9	868	1,025
	Total	418	2,107	807	816	0	4,148				
Week 33 8/07–8/13	Alaska	83	574	81	200	0	937	33.9	25.8	895	979
	Nass	104	69	414	386	0	973	35.2	51.9	888	1,058
	Skeena	39	775	0	40	0	854	30.9	43.2	783	925
	Total	225	1,418	495	626	0	2,764				
Week 34 8/14–8/20	Alaska	48	484	81	126	6	744	38.4	17.4	716	773
	Nass	39	118	130	57	3	346	17.8	22.3	309	382
	Skeena	11	746	0	83	7	847	43.7	27.2	802	892
	Total	98	1,347	211	266	16	1,937				
Week 35 8/21–8/27	Alaska	33	706	18	170	0	926	30.4	30.0	877	976
	Nass	127	201	263	313	0	904	29.7	50.0	821	986
	Skeena	83	1,008	0	123	0	1,214	39.9	42.6	1,144	1,284
	Total	242	1,916	280	606	0	3,044				
Week 36 8/28–9/03	Alaska	46	232	16	144	0	437	24.5	18.8	406	468
	Nass	9	178	303	253	0	743	41.7	31.3	692	795
	Skeena	1	603	0	0	0	603	33.8	30.1	554	653
	Total	56	1,013	319	396	0	1,784				
Week 37 9/04–9/10	Alaska	31	209	10	59	0	309	29.5	13.4	287	331
	Nass	25	86	197	165	0	473	45.1	27.3	428	517
	Skeena	0	265	0	0	0	265	25.3	19.9	232	298
	Total	56	560	207	224	0	1,047				
Week 38 9/11–9/17	Alaska	9	103	9	62	0	183	20.2	8.6	169	197
	Nass	27	74	181	128	0	410	45.3	21.1	375	444
	Skeena	11	300	0	0	0	312	34.5	19.6	279	344
	Total	47	477	190	190	0	904				

-continued-

Table 3.–Page 2 of 2.

Dates	Stock Group	Catch By Age Class					Total	Percent	Standard Error	90% Confidence Interval	
		1.2	1.3	2.2	2.3	Other				Lower	Upper
Week 39	Alaska	0	12	7	4	0	23	19.6	2.4	19	27
9/18–9/24	Nass	0	14	7	21	0	42	36.1	5.7	32	51
	Skeena	0	51	0	0	0	51	44.3	6.5	40	62
	Total	0	77	14	24	0	115				
Season	Alaska	1,877	6,942	1,031	2,667	143	12,660	15.9	239	12,267	13,054
Totals	Nass	4,102	9,522	25,185	15,674	1,286	55,770	70.0	356	55,185	56,355
	Skeena	348	10,414	7	431	94	11,294	14.2	260	10,866	11,723
	Total	6,328	26,878	26,224	18,772	1,523	79,725				

Table 4.—Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 101 purse seine fishery, 2005.

Dates	Stock Group	Catch By Age Class						Percent	Standard	90% Confidence Interval	
		1.2	1.3	2.2	2.3	Other	Total		Error	Lower	Upper
Week 28	Alaska	277	420	232	114	35	1,078	29.8	33.6	1,023	1,133
7/03–7/09	Nass	205	118	702	630	56	1,712	47.4	54.7	1,622	1,802
	Skeena	117	522	0	158	27	824	22.8	41.5	756	892
	Total	599	1,060	935	902	118	3,614				
Week 29	Alaska	719	958	586	268	96	2,626	34.8	65.4	2,519	2,734
7/10–7/16	Nass	657	0	745	658	78	2,138	28.3	117.4	1,945	2,331
	Skeena	368	2,099	21	190	101	2,779	36.8	123.8	2,575	2,983
	Total	1,744	3,056	1,352	1,117	274	7,543				
Week 30	Alaska	832	2,201	669	325	221	4,248	41.3	97.5	4,087	4,408
7/17–7/23	Nass	0	313	984	892	120	2,309	22.4	139.8	2,079	2,539
	Skeena	1,338	1,638	168	391	194	3,729	36.3	123.8	3,525	3,933
	Total	2,170	4,152	1,821	1,607	536	10,286				
Week 31	Alaska	1,412	6,967	516	763	109	9,767	74.0	190.5	9,453	10,080
7/24–7/30	Nass	0	0	490	961	16	1,467	11.1	173.7	1,181	1,753
	Skeena	1,050	714	176	0	22	1,962	14.9	143.4	1,727	2,198
	Total	2,462	7,681	1,182	1,723	148	13,196				
Week 32	Alaska	1,072	4,215	420	628	250	6,585	52.6	125.6	6,378	6,791
7/31–8/06	Nass	0	403	749	676	72	1,900	15.2	140.1	1,670	2,131
	Skeena	1,212	2,108	322	251	154	4,045	32.3	130.4	3,831	4,260
	Total	2,284	6,725	1,491	1,554	476	12,530				
Week 33	Alaska	492	2,948	223	898	85	4,646	62.8	93.8	4,492	4,801
8/07–8/13	Nass	0	385	428	190	19	1,023	13.8	75.6	898	1,147
	Skeena	965	669	68	0	32	1,734	23.4	100.6	1,568	1,899
	Total	1,457	4,003	719	1,088	136	7,403				
Week 34	Alaska	342	7,540	511	1,192	137	9,721	73.6	207.8	9,380	10,063
8/14–8/20	Nass	17	441	657	209	19	1,342	10.2	150.2	1,095	1,590
	Skeena	1,276	847	0	0	30	2,153	16.3	214.1	1,801	2,505
	Total	1,635	8,827	1,168	1,401	187	13,217				
Week 35	Alaska	0	3,899	465	1,057	60	5,480	56.6	235.4	5,093	5,868
8/21–8/27	Nass	630	267	705	113	19	1,734	17.9	157.9	1,474	1,994
	Skeena	1,337	1,099	0	0	27	2,464	25.5	188.7	2,153	2,774
	Total	1,968	5,264	1,170	1,170	106	9,678				
Week 36^a	Alaska	0	1,431	171	388	22	2,012	56.6	86.4	1,870	2,154
8/28–9/03	Nass	231	98	259	42	7	637	17.9	58.0	541	732
	Skeena	491	404	0	0	10	904	25.5	69.3	791	1,018
	Total	722	1,933	429	429	39	3,553				
Season	Alaska	5,146	30,578	3,793	5,631	1,017	46,164	57.0	426	45,462	46,865
Totals	Nass	1,740	2,024	5,720	4,371	407	14,261	17.6	378	13,640	14,882
	Skeena	8,154	10,100	754	990	597	20,595	25.4	408	19,924	21,266
	Total	15,040	42,701	10,267	10,992	2,020	81,020				

^a Age and stock composition for week 36 estimated using 182 samples collected during week 35.

Table 5—Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 102 purse seine fishery, 2005.

Dates	Stock Group	Catch By Age Class.					Total	Percent	Standard	90% Confidence Interval	
		1.2	1.3	2.2	2.3	Other			Error	Lower	Upper
Week 27–29	Alaska	63	221	0	49	0	333	90.6	11.0	315	352
6/26–7/16	Nass	0	0	0	0	0	0	0.0	0.0	0	0
	Skeena	0	0	0	35	0	35	9.4	11.0	16	53
	Total	63	221	0	84	0	368				
Week 30	Alaska	614	1,384	282	88	25	2,392	89.1	37.7	2,330	2,454
7/17–7/23	Nass	189	0	0	50	2	242	9.0	38.4	178	305
	Skeena	0	0	50	0	1	50	1.9	14.1	27	73
	Total	802	1,384	332	138	28	2,684				
Week 31	Alaska	1,907	3,979	1,288	448	1,042	8,664	84.5	103.6	8,493	8,834
7/24–7/30	Nass	0	501	205	385	149	1,240	12.1	107.6	1,063	1,417
	Skeena	300	0	0	11	43	354	3.5	61.6	253	455
	Total	2,207	4,480	1,493	844	1,234	10,258				
Week 32	Alaska	957	4,354	153	656	498	6,618	93.2	105.9	6,444	6,792
7/31–8/06	Nass	112	0	167	108	32	419	5.9	82.6	283	555
	Skeena	0	0	62	0	5	67	0.9	28.0	21	113
	Total	1,069	4,354	382	764	535	7,104				
Week 33	Alaska	887	3,442	407	583	308	5,627	71.5	101.3	5,460	5,794
8/07–8/13	Nass	61	84	357	77	34	614	7.8	85.2	474	754
	Skeena	832	580	126	0	89	1,628	20.7	98.7	1,466	1,790
	Total	1,781	4,107	890	661	431	7,869				
Week 34^a	Alaska	750	2,911	344	493	261	4,759	71.5	85.7	4,618	4,900
8/14–8/20	Nass	52	71	302	65	28	519	7.8	72.1	400	638
	Skeena	704	491	107	0	75	1,377	20.7	83.5	1,240	1,514
	Total	1,506	3,473	753	559	364	6,655				
Week 35–38^a	Alaska	527	2,044	241	346	183	3,341	71.5	60.2	3,242	3,440
8/21–9/17	Nass	36	50	212	46	20	364	7.8	50.6	281	448
	Skeena	494	345	75	0	53	967	20.7	58.6	870	1,063
	Total	1,057	2,438	529	392	256	4,672				
Season	Alaska	5,705	18,335	2,715	2,664	2,316	31,735	80.1	211	31,387	32,082
Totals	Nass	451	706	1,244	732	265	3,398	8.6	187	3,091	3,705
	Skeena	2,330	1,416	420	46	266	4,477	11.3	158	4,217	4,738
	Total	8,486	20,457	4,379	3,442	2,847	39,610				

^a Age and stock composition for week 34–38 estimated using 274 samples collected during week 33.

Table 6.—Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 103 purse seine fishery, 2005.

Dates	Group	Catch By Age Class						Percent	Standard Error	90% Confidence Interval	
		1.2	1.3	2.2	2.3	Other	Total			Lower	Upper
Week 30^a 7/17–7/23	Alaska	101	646	43	118	3	911	42.4	22.0	875	947
	Nass	92	134	149	70	2	447	20.8	31.4	395	498
	Skeena	162	537	0	89	3	790	36.8	27.3	745	835
	Total	354	1,317	192	277	8	2,148				
Week 31 7/24–7/30	Alaska	586	3,759	251	686	19	5,302	42.4	128.2	5,091	5,513
	Nass	534	777	869	409	9	2,599	20.8	183.0	2,298	2,900
	Skeena	941	3,125	0	518	16	4,600	36.8	159.2	4,338	4,862
	Total	2,061	7,662	1,120	1,613	45	12,501				
Week 32 7/31–8/06	Alaska	1,530	3,220	1,285	354	260	6,650	69.9	117.1	6,457	6,842
	Nass	0	0	96	242	14	352	3.7	61.7	251	454
	Skeena	702	1,404	0	307	98	2,510	26.4	105.9	2,336	2,684
	Total	2,232	4,623	1,382	903	372	9,512				
Week 33 8/07–8/13	Alaska	961	1,732	2,069	392	0	5,154	62.6	360.2	4,561	5,746
	Nass	48	1,221	283	0	0	1,552	18.9	270.3	1,107	1,997
	Skeena	952	576	0	0	0	1,527	18.5	341.3	966	2,088
	Total	1,960	3,528	2,352	392	0	8,233				
Week 34 8/14–8/20	Alaska	5,809	6,356	170	642	828	13,805	95.4	189.5	13,493	14,117
	Nass	0	14	0	227	15	256	1.8	135.3	33	479
	Skeena	271	0	120	0	25	416	2.9	147.3	174	658
	Total	6,080	6,370	290	869	869	14,477				
Week 35–36 8/21–8/27	Alaska	450	776	93	82	143	1,544	89.6	26.8	1,500	1,588
	Nass	0	20	0	0	2	21	1.2	6.4	11	32
	Skeena	53	0	66	24	15	158	9.2	27.8	112	203
	Total	504	795	159	106	159	1,723				
Season Totals	Alaska	9,437	16,489	3,912	2,274	1,253	33,365	68.7	444	32,635	34,096
	Nass	674	2,165	1,398	949	42	5,227	10.8	360	4,635	5,820
	Skeena	3,080	5,642	185	937	157	10,001	20.6	420	9,311	10,692
	Total	13,191	24,295	5,495	4,160	1,452	48,594				

^a Age and stock composition for week 30 estimated using 279 samples collected during week 31.

Table 7.—Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 104 purse seine fishery, 2005.

Dates	Stock Group	Catch By Age Class						Standard 90% Confidence Interval			
		1.2	1.3	2.2	2.3	Other	Total	Percent	Error	Lower	Upper
Week 28 7/03–7/09	Alaska	294	704	262	129	48	1,436	22.4	133.1	1,217	1,655
	Nass	132	197	980	795	72	2,175	34.0	206.0	1,836	2,514
	Skeena	1,125	625	307	15	71	2,142	33.5	179.3	1,847	2,438
	South Migrating	443	164	8	0	37	651	10.2	84.6	512	790
	Total	1,994	1,689	1,556	939	227	6,405				
Week 29 7/10–7/16	Alaska	723	1,053	0	148	0	1,924	22.6	144.8	1,686	2,162
	Nass	0	0	1,119	474	0	1,593	18.7	303.0	1,094	2,091
	Skeena	1,395	1,901	203	0	0	3,500	41.2	235.2	3,113	3,887
	South Migrating	1,381	0	18	0	83	1,483	17.4	190.2	1,170	1,796
	Total	3,499	2,955	1,339	622	83	8,499				
Week 30 7/17–7/23	Alaska	1,409	2,828	649	658	109	5,654	27.2	360.0	5,062	6,246
	Nass	910	575	1,487	868	76	3,916	18.8	481.2	3,124	4,707
	Skeena	3,123	2,789	916	0	135	6,963	33.5	521.0	6,106	7,820
	South Migrating	2,655	1,308	51	1	239	4,253	20.5	378.5	3,631	4,876
	Total	8,097	7,499	3,103	1,527	559	20,786				
Week 31 7/24–7/30	Alaska	2,326	2,245	0	122	160	4,853	13.4	429.1	4,147	5,559
	Nass	1,755	0	4,636	790	245	7,427	20.5	1,041.7	5,713	9,140
	Skeena	10,663	3,940	1,154	141	542	16,440	45.4	943.9	14,887	17,993
	South Migrating	6,969	0	89	2	421	7,481	20.7	732.9	6,275	8,686
	Total	21,714	6,185	5,879	1,054	1,368	36,201				
Week 32 7/31–8/06	Alaska	4,646	7,365	0	2,149	540	14,701	15.7	1,241.3	12,659	16,743
	Nass	3,790	4,634	5,803	1,745	609	16,581	17.7	2,053.0	13,204	19,958
	Skeena	10,451	18,949	472	290	1,150	31,312	33.5	2,430.9	27,313	35,311
	South Migrating	22,950	5,920	369	7	1,744	30,990	33.1	2,105.8	27,526	34,454
	Total	41,838	36,869	6,644	4,190	4,042	93,584				
Week 33 8/07–8/13	Alaska	3,043	2,069	2,124	376	293	7,904	11.9	854.6	6,498	9,310
	Nass	2,160	2,223	3,234	1,462	349	9,429	14.2	1,487.0	6,983	11,875
	Skeena	11,728	10,677	1,943	595	959	25,902	39.0	1,654.0	23,181	28,623
	South Migrating	19,877	1,763	276	5	1,307	23,229	34.9	1,484.7	20,786	25,671
	Total	36,808	16,731	7,577	2,439	2,908	66,464				
Week 34 8/14–8/20	Alaska	21,534	6,015	326	1,899	70	29,844	10.9	3,344.0	24,343	35,344
	Nass	0	0	2,177	398	6	2,580	0.9	1,058.3	839	4,321
	Skeena	0	18,096	6,598	3,163	65	27,923	10.2	3,481.3	22,196	33,649
	South Migrating	189,602	9,865	2,548	46	12,047	214,109	78.0	4,999.6	205,884	222,333
	Total	211,136	33,976	11,649	5,507	12,187	274,455				
Week 35^a 8/21–8/27	Alaska	1,213	339	18	107	4	1,681	10.9	188.4	1,371	1,991
	Nass	0	0	123	22	0	145	0.9	59.6	47	243
	Skeena	0	1,019	372	178	4	1,573	10.2	196.1	1,250	1,895
	South Migrating	10,680	556	144	3	679	12,061	78.0	281.6	11,597	12,524
	Total	11,893	1,914	656	310	687	15,460				
Season Totals	Alaska	35,188	22,618	3,379	5,588	1,223	67,997	13.0	3,720	61,877	74,117
	Nass	8,747	7,629	19,559	6,555	1,357	43,846	8.4	3,000	38,911	48,781
	Skeena	38,486	57,996	11,965	4,382	2,926	115,755	22.2	4,696	108,030	123,480
	South Migrating	254,558	19,576	3,502	64	16,556	294,256	56.4	5,695	284,887	303,625
	Total	336,979	107,818	38,406	16,589	22,062	521,854				

^a Age and stock composition for week 35 estimated from 429 samples collected during week 34.

Table 8.—Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 106 drift gillnet fishery, 2005.

Dates	Stock Group	Catch By Age Class						Percent	Standard 90% Confidence Interval		
		1.2	1.3	2.2	2.3	Other	Total		Error	Lower	Upper
Week 25 ^a 6/12–6/18	Alaska I	18	315	10	47	12	1	403	38.1	13	381
	Alaska II	0	0	0	0	0	0	0	0.0	0	0
	Nass	10	76	41	151	8	1	287	27.2	20	253
	Skeena	0	54	0	0	2	0	56	5.3	11	39
	Tahltan	0	133	0	8	4	1	147	13.9	15	122
	Stikine	0	50	0	0	2	0	52	4.9	10	36
	Tuya	0	108	0	0	3	0	112	10.6	20	79
	Total	28	736	51	206	31	4	1,056			
Week 26 ^a 6/19–6/25	Alaska I	320	2,304	20	636	34	6	3,319	20.1	146	3,079
	Alaska II	0	0	0	0	0	0	0	0.0	0	0
	Nass	429	2,023	1,127	1,615	53	10	5,257	31.8	239	4,864
	Skeena	14	1,276	0	0	13	2	1,306	7.9	177	1,014
	Tahltan	111	4,702	5	820	57	11	5,706	34.5	279	5,248
	Stikine	0	32	0	7	0	0	40	0.2	108	-139
	Tuya	0	913	0	0	9	2	924	5.6	325	389
	Total	875	11,250	1,152	3,078	166	32	16,552			
Week 27 ^a 6/26–7/02	Alaska I	385	2,210	19	52	22	15	2,703	20.5	118	2,509
	Alaska II	0	0	0	0	0	0	0	0.0	0	0
	Nass	175	403	569	777	15	12	1,950	14.8	160	1,687
	Skeena	115	2,440	0	0	19	17	2,591	19.6	151	2,343
	Tahltan	65	4,892	167	553	41	40	5,757	43.6	144	5,520
	Stikine	0	0	0	73	1	0	74	0.6	16	47
	Tuya	0	134	0	0	2	0	135	1.0	21	101
	Total	741	10,078	755	1,454	98	84	13,210			
Week 28 ^a 7/03–7/09	Alaska I	325	3,332	190	569	69	32	4,517	37.0	115	4,328
	Alaska II	0	0	0	0	0	0	0	0.0	0	0
	Nass	295	671	481	1,023	39	18	2,528	20.7	148	2,285
	Skeena	19	2,320	0	0	37	18	2,393	19.6	136	2,169
	Tahltan	27	2,204	96	284	41	20	2,671	21.9	109	2,491
	Stikine	0	0	0	9	0	0	10	0.1	2	6
	Tuya	0	95	0	0	1	0	96	0.8	15	72
	Total	666	8,622	766	1,885	187	89	12,215			
Week 29 ^a 7/10–7/16	Alaska I	417	5,304	231	583	52	10	6,597	44.2	139	6,369
	Alaska II	0	0	0	0	0	0	0	0.0	0	0
	Nass	239	973	538	1,759	26	6	3,541	23.7	174	3,254
	Skeena	81	1,282	0	0	11	2	1,376	9.2	114	1,189
	Tahltan	0	2,633	87	209	20	5	2,955	19.8	122	2,755
	Stikine	0	0	0	41	1	0	42	0.3	9	26
	Tuya	0	415	0	0	5	0	420	2.8	64	315
	Total	737	10,607	856	2,592	114	23	14,930			
Week 30 7/17–7/23	Alaska I	756	4,054	66	485	56	28	5,445	42.0	174	5,159
	Alaska II	0	1,155	0	0	20	10	1,186	9.1	95	1,030
	Nass	244	763	408	620	26	13	2,073	16.0	181	1,776
	Skeena	0	940	0	0	16	8	965	7.4	92	814
	Tahltan	77	1,372	13	286	30	15	1,794	13.8	82	1,659
	Stikine	0	1,362	0	132	14	7	1,516	11.7	139	1,287
	Tuya	0	0	0	0	0	0	0	0.0	0	0
	Total	1,076	9,647	487	1,523	162	81	12,978			
Week 31 7/24–7/30	Alaska I	108	2,542	46	411	5	9	3,120	60.4	55	3,029
	Alaska II	0	408	0	0	0	0	408	7.9	34	353
	Nass	95	393	115	560	1	3	1,166	22.6	64	1,060
	Skeena	0	273	0	0	1	1	275	5.3	31	224
	Tahltan	0	90	14	72	0	1	178	3.4	22	142
	Stikine	0	0	0	18	0	0	18	0.4	7	7
	Tuya	0	0	0	0	0	0	0	0.0	0	0
	Total	202	3,705	174	1,062	7	14	5,164			

-continued-

Table 8.–Page 2 of 2.

Dates	Stock Group	Catch By Age Class						Percent	Standard Error	90% Confidence Interval	
		1.2	1.3	2.2	2.3	Other	Total			Lower	Upper
Week 32	Alaska I	143	2,585	84	481	11	7	3,312	65.5	69	3,198
7/31–8/06	Alaska II	0	376	0	0	2	1	379	7.5	37	318
	Nass	58	224	146	452	2	1	884	17.5	60	785
	Skeena	0	236	0	0	1	1	237	4.7	27	193
	Tahltan	0	62	6	88	1	1	158	3.1	18	128
	Stikine	0	79	0	4	0	0	83	1.6	24	44
	Tuya	0	0	0	0	0	0	0	0.0	0	0
	Total	201	3,562	237	1,025	17	11	5,053			
Week 33	Alaska I	80	3,295	155	781	5	5	4,320	44.3	114	4,133
8/07–8/13	Alaska II	0	2,155	0	0	3	3	2,161	22.2	94	2,006
	Nass	226	379	383	409	2	2	1,401	14.4	103	1,231
	Skeena	59	1,001	0	0	2	2	1,064	10.9	65	958
	Tahltan	0	0	0	191	0	0	191	2.0	24	151
	Stikine	0	506	0	107	2	2	616	6.3	55	525
	Tuya	0	0	0	0	0	0	0	0.0	0	0
	Total	364	7,337	538	1,487	13	13	9,754			
Week 34	Alaska I	76	4,105	132	1,233	12	26	5,583	59.9	109	5,404
8/14–8/20	Alaska II	0	1,720	0	0	2	9	1,730	18.6	91	1,580
	Nass	199	471	263	227	2	6	1,168	12.5	89	1,022
	Skeena	84	604	0	0	1	3	693	7.4	57	598
	Tahltan	0	0	0	142	0	1	143	1.5	24	104
	Stikine	0	0	0	2	0	0	2	0.0	9	-12
	Tuya	0	0	0	0	0	0	0	0.0	0	0
	Total	358	6,900	395	1,604	17	45	9,319			
Week 35	Alaska I	72	2,436	55	673	0	9	3,244	54.5	73	3,124
8/21–8/27	Alaska II	0	862	0	0	0	3	865	14.5	53	778
	Nass	49	214	196	491	0	3	954	16.0	65	847
	Skeena	58	750	0	0	0	3	811	13.6	48	732
	Tahltan	4	0	11	27	0	0	43	0.7	11	25
	Stikine	0	0	0	0	0	0	0	0.0	0	0
	Tuya	0	38	0	0	0	0	38	0.6	13	16
	Total	182	4,300	262	1,191	0	18	5,954			
Week 36^b	Alaska I	7	944	28	373	2	2	1,356	55.4	33	1,302
8/28–9/03	Alaska II	0	181	0	0	0	0	182	7.4	18	152
	Nass	46	123	99	135	1	1	405	16.5	28	359
	Skeena	13	476	0	0	1	1	492	20.1	25	451
	Tahltan	0	0	0	0	0	0	0	0.0	0	0
	Stikine	0	0	0	2	0	0	2	0.1	4	-5
	Tuya	0	12	0	0	0	0	12	0.5	4	5
	Total	66	1,737	127	510	5	5	2,449			
Wks. 37–41	Alaska I	1	478	29	217	0	0	725	46.5	31	674
9/04–10/08	Alaska II	0	181	0	0	0	0	181	11.6	16	155
	Nass	13	106	40	170	0	0	329	21.1	24	290
	Skeena	5	258	0	0	0	0	263	16.9	20	230
	Tahltan	0	2	0	7	0	0	9	0.6	4	2
	Stikine	0	51	0	0	0	0	51	3.3	10	35
	Tuya	0	0	0	0	0	0	0	0.0	0	0
	Total	19	1,076	68	394	0	0	1,558			
Season	Alaska I	2,707	33,904	1,063	6,539	279	152	44,644	40.5	372	44,032
Totals	Alaska II	0	7,039	0	0	27	25	7,091	6.4	179	6,797
	Nass	2,078	6,818	4,406	8,390	174	76	21,942	19.9	447	21,207
	Skeena	448	11,911	0	0	104	59	12,522	11.4	327	11,985
	Tahltan	284	16,090	399	2,688	195	95	19,750	17.9	366	19,148
	Stikine	0	2,081	0	396	19	9	2,505	2.3	188	2,196
	Tuya	0	1,715	0	0	21	2	1,738	1.6	333	1,189
	Total	5,516	79,558	5,868	18,013	818	419	110,192			

^a Age and stock composition for statistical area 106-30 weeks 25–29 estimated using 245 samples collected during week 29.^b Age and stock composition for statistical area 106-30 week 36 estimated using 85 samples collected during week 35.

Table 9.—Estimated contribution of sockeye salmon stocks originating in Alaska and Canada to Alaska District 108 drift gillnet fishery, 2005.

Dates	Stock Group	Catch By Age Class						Total	Percent	Standard	90% C.I.	
		1.2	1.3	2.2	2.3	Other	0.			Error	Lower	Upper
Week 22–25 ^a 5/22–6/18	Alaska I	0	48	0	0	0	0	48	6.5	6.2	38	58
	Alaska II	0	0	0	0	0	0	0	0.0	0.0	0	0
	Nass	0	0	5	16	0	0	21	2.8	6.4	10	31
	Skeena	0	0	0	0	0	0	0	0.0	0.0	0	0
	Tahltan	0	136	0	39	0	0	175	23.5	15.5	149	200
	Stikine	0	113	0	7	109	0	229	30.9	18.5	199	260
	Tuya	0	269	0	0	0	0	269	36.3	18.7	239	300
	Total	0	566	5	62	109	0	742				
Week 26 6/19–6/25	Alaska I	172	911	0	90	0	0	1,172	11.8	94.8	1,016	1,328
	Alaska II	0	0	0	0	0	0	0	0.0	0.0	0	0
	Nass	31	0	334	533	0	0	898	9.0	109.8	717	1,079
	Skeena	0	1,696	0	0	0	0	1,696	17.0	129.5	1,483	1,909
	Tahltan	89	2,073	0	346	0	0	2,508	25.2	181.6	2,209	2,807
	Stikine	0	1,049	0	11	688	0	1,748	17.6	133.3	1,529	1,967
	Tuya	0	1,925	0	0	0	0	1,925	19.4	241.9	1,527	2,323
	Total	292	7,654	334	980	688	0	9,948				
Week 27 6/26–7/02	Alaska I	190	284	2	0	0	7	484	3.3	134.5	262	705
	Alaska II	0	184	0	0	0	3	187	1.3	53.8	98	275
	Nass	0	228	86	133	0	7	453	3.1	96.5	295	612
	Skeena	0	0	0	0	0	0	0	0.0	0.0	0	0
	Tahltan	194	4,947	30	939	0	91	6,202	42.2	327.8	5,662	6,741
	Stikine	0	0	0	53	592	1	645	4.4	130.0	432	859
	Tuya	0	6,611	0	0	0	99	6,709	45.7	367.0	6,106	7,313
	Total	385	12,253	118	1,125	592	207	14,680				
Week 28 7/03–7/09	Alaska I	198	1,511	14	283	0	17	2,024	8.6	191.2	1,709	2,338
	Alaska II	0	0	0	0	0	0	0	0.0	0.0	0	0
	Nass	132	112	514	993	0	15	1,766	7.5	249.7	1,355	2,176
	Skeena	0	0	0	0	0	0	0	0.0	0.0	0	0
	Tahltan	239	6,933	183	1,286	0	72	8,713	36.9	467.8	7,944	9,483
	Stikine	0	2,219	0	0	759	19	2,996	12.7	282.2	2,532	3,461
	Tuya	0	8,059	0	0	0	67	8,126	34.4	535.6	7,245	9,007
	Total	569	18,834	712	2,562	759	190	23,625				
Week 29 7/10–7/16	Alaska I	305	1,245	62	20	0	18	1,650	7.3	198.6	1,323	1,977
	Alaska II	0	0	0	0	0	0	0	0.0	0.0	0	0
	Nass	199	340	214	557	0	15	1,324	5.8	244.9	921	1,727
	Skeena	0	1,316	0	0	0	15	1,330	5.9	261.3	901	1,760
	Tahltan	456	7,036	231	934	0	96	8,753	38.5	444.6	8,021	9,484
	Stikine	0	4,305	0	181	2,200	50	6,737	29.6	376.7	6,117	7,356
	Tuya	0	2,907	0	0	0	32	2,940	12.9	544.8	2,043	3,836
	Total	959	17,149	508	1,692	2,200	226	22,734				
Week 30 7/17–7/23	Alaska I	131	594	119	231	0	9	1,085	9.3	139.8	855	1,315
	Alaska II	0	525	0	0	0	5	529	4.5	74.8	406	652
	Nass	106	0	241	539	0	8	894	7.6	95.7	736	1,051
	Skeena	1	409	0	0	0	4	413	3.5	112.2	228	597
	Tahltan	89	1,572	14	358	0	18	2,052	17.5	178.4	1,758	2,345
	Stikine	0	3,364	0	252	935	32	4,583	39.2	163.2	4,314	4,851
	Tuya	0	2,118	0	0	0	19	2,137	18.3	248.8	1,727	2,546
	Total	327	8,582	374	1,380	935	94	11,692				
Week 31 7/24–7/30	Alaska I	35	149	3	20	0	1	207	4.5	44.8	133	281
	Alaska II	0	0	0	0	0	0	0	0.0	0.0	0	0
	Nass	28	0	37	6	0	0	71	1.6	29.9	22	121
	Skeena	0	15	0	0	0	0	15	0.3	42.7	-55	85
	Tahltan	24	536	4	82	0	4	649	14.1	73.0	529	769
	Stikine	0	1,901	0	129	670	11	2,711	58.9	79.7	2,580	2,842
	Tuya	0	942	0	0	0	5	948	20.6	104.9	775	1,120
	Total	86	3,543	43	238	670	22	4,601				

-continued-

Table 9.–Page 2 of 2.

Dates	Stock Group	Catch By Age Class							Percent	Standard	90% C.I.	
		1.2	1.3	2.2	2.3	Other	0.	Total		Error	Lower	Upper
Week 32	Alaska I	5	33	4	70	0	1	111	4.3	28.5	64	158
7/31–8/06	Alaska II	0	133	0	0	0	1	135	5.1	15.9	109	161
	Nass	4	0	49	118	0	2	172	6.6	28.8	125	220
	Skeena	0	271	0	0	0	3	274	10.5	30.8	223	324
	Tahltan	3	596	5	157	0	7	769	29.4	47.9	690	847
	Stikine	0	512	0	52	136	5	706	27.0	40.1	641	772
	Tuya	0	445	0	0	0	4	449	17.1	62.5	346	551
	Total	11	1,990	57	398	136	23	2,616				
Week 33	Alaska I	0	936	12	0	0	0	949	21.7	86.3	807	1,091
8/07–8/13	Alaska II	0	312	0	0	0	0	312	7.1	43.4	241	384
	Nass	0	32	165	307	0	0	504	11.5	162.7	236	772
	Skeena	0	90	0	0	0	0	90	2.1	45.8	15	166
	Tahltan	0	377	16	15	0	0	408	9.3	64.7	301	514
	Stikine	0	1,147	0	0	257	0	1,404	32.1	122.4	1,203	1,605
	Tuya	0	703	0	0	0	0	703	16.1	99.4	540	867
	Total	0	3,600	193	321	257	0	4,371				
Week 34	Alaska I	40	0	19	0	0	1	60	2.3	30.9	10	111
8/14–8/20	Alaska II	0	0	0	0	0	0	0	0.0	0.0	0	0
	Nass	33	0	82	384	0	10	509	19.4	133.6	289	729
	Skeena	0	0	0	0	0	0	0	0.0	3.3	-5	6
	Tahltan	27	48	0	18	0	2	96	3.7	24.3	56	136
	Stikine	0	1,775	0	0	101	36	1,911	73.0	147.8	1,668	2,155
	Tuya	0	40	0	0	0	1	41	1.6	23.3	3	79
	Total	101	1,863	101	403	101	50	2,618				
	Alaska I	131	594	119	231	0	9	1,085	9.3	139.8	855	1,315
Week 35	Alaska I	3	0	6	13	0	0	23	3.4	6.0	13	33
8/21–8/27	Alaska II	0	0	0	0	0	0	0	0.0	0.0	0	0
	Nass	3	0	28	73	0	0	104	15.4	23.8	65	143
	Skeena	0	87	0	0	0	0	87	12.9	7.4	75	99
	Tahltan	2	0	0	4	0	0	6	0.9	2.7	2	10
	Stikine	0	432	0	5	17	0	455	67.4	25.4	413	497
	Tuya	0	0	0	0	0	0	0	0.0	0.0	0	0
	Total	9	519	35	95	17	0	675				
Week 36	Alaska I	0	0	16	20	0	0	35	5.7	9.5	20	51
8/28–9/03	Alaska II	0	152	0	0	0	0	152	24.3	21.9	116	188
	Nass	0	74	68	112	0	0	254	40.6	34.3	198	311
	Skeena	0	40	0	0	0	0	40	6.3	6.8	28	51
	Tahltan	0	0	0	6	0	0	6	0.9	2.3	2	9
	Stikine	0	130	0	8	0	0	139	22.2	17.8	110	168
	Tuya	0	0	0	0	0	0	0	0.0	0.0	0	0
	Total	0	396	83	146	0	0	626				
Week 37–41^b	Alaska I	0	0	0	14	0	0	14	2.5	7.6	1	26
9/04–10/08	Alaska II	0	16	0	0	0	0	16	2.9	3.7	10	22
	Nass	0	0	0	77	0	0	77	14.4	41.6	9	146
	Skeena	0	80	0	0	0	0	80	14.9	12.6	59	101
	Tahltan	0	0	0	4	0	0	4	0.7	2.2	0	8
	Stikine	0	307	0	6	34	0	346	64.5	40.3	280	413
	Tuya	0	0	0	0	0	0	0	0.0	0.0	0	0
	Total	0	403	0	101	34	0	537				
Season	Alaska I	1,079	5,710	258	760	0	55	7,862	7.9	366.2	7,260	8,464
Totals	Alaska II	0	1,322	0	0	0	9	1,331	1.3	105.5	1,157	1,504
	Nass	535	786	1,822	3,849	0	56	7,048	7.1	449.9	6,308	7,789
	Skeena	1	4,004	0	0	0	21	4,026	4.0	320.6	3,498	4,553
	Tahltan	1,124	24,254	482	4,189	0	290	30,339	30.5	775.5	29,064	31,615
	Stikine	0	17,255	0	704	6,499	154	24,612	24.7	574.9	23,666	25,558
	Tuya	0	24,019	0	0	0	227	24,246	24.4	929.7	22,717	25,776
	Total	2,740	77,351	2,562	9,502	6,499	811	99,465				

^a Age and stock composition for week 22–25 estimated using 156 samples collected during week 25.^b Age and stock composition for week 37–41 estimated using 16 samples collected during week 37.

APPENDICES

Appendix A.–Scale measurement and count characters calculated from intercirculus distances and evaluated for use in linear discriminant function analysis.

Variable		
Code	Growth Zone	Scale Character
Z1	1st Freshwater Annular	Number of circuli (NC1FW)
Z2		Width of zone (S1FW)
Z3		Distance from scale focus (C0) to circulus 2 (C2)
Z4		Distance from scale focus to circulus 4 (C0 -C4)
Z5		Distance from scale focus to circulus 6 (C0 -C6)
Z6		Distance from scale focus to circulus 8 (C0 -C8)
Z12		Distance from fourth-to-last circulus to end of zone, C(NC1FW-4) -EOZ
Z13		Distance from second-to-last circulus to end of zone, C(NC1FW-2) -EOZ
Z28		Number of circuli in first 3/4 of zone
Z30		Relative width, (variable 29)/S1FW
Z31	2nd Freshwater Annular	Number of circuli (NC2FW)
Z32		Width of zone (S2FW)
Z33		Distance from end of first annular zone (E1FW) to circulus 2 (C2)
Z34		Distance from end of first annular zone to circulus 4 (E1FW -C4)
Z35		Distance from end of first annular zone to circulus 6 (E1FW -C6)
Z36		Distance from end of first annular zone to circulus 8 (E1FW -C8)
Z42		Distance from fourth-to-last circulus to end of zone, C(NC2FW-4) -EOZ
Z43		Distance from second-to-last circulus to end of zone, C(NC2FW-2) -EOZ
Z57		Average interval between circuli (S2FW/NC2FW)
Z58		Number of circuli in first 3/4 of zone
Z61	Freshwater Plus Growth	Number of circuli (NCPGZ)
Z62		Width of zone (SPGZ)
Z63	All Freshwater	Total number of annular circuli (NC1FW + NC2FW)
Z64		Total width of annular zones (S1FW + S2FW)
Z65		Total number of freshwater circuli (NC1FW + NC2FW + NCPGZ)
Z66		Total width of freshwater zones (S1FW + S2FW + SPGZ)
Z70	1st Marine Annular	Number of circuli (NC1OZ)
Z71		Width of zone (S1OZ)
Z72		Distance from end of freshwater growth (EFW) to circulus 3 (C3)
Z73		Distance from end of freshwater growth to circulus 6 (EFW -C6)
Z74		Distance from end of freshwater growth to circulus 9 (EFW -C9)
Z75		Distance from end of freshwater growth to circulus 12 (EFW -C12)
Z76		Distance from end of freshwater growth to circulus 15 (EFW -C15)
Z85		Distance from sixth-to-last circulus to end of zone, C(NC1OZ-6) -EOZ
Z86		Distance from third-to-last circulus to end of zone, C(NC1OZ-3) -EOZ
Z87		Distance from circulus 3 to end of zone (C3 -EOZ)
Z88		Distance from circulus 9 to end of zone (C9 -EOZ)
Z89		Distance from circulus 15 to end of zone (C15 -EOZ)
Z105		Average interval between circuli (S1OZ/NC1OZ)
Z106		Number of circuli in first 1/2 of zone

Appendix B.—Scale variables with associated entry F-statistics, and classification matrices for age-specific linear discriminant models used to classify sockeye salmon commercial catches in the District 101 gillnet fishery, and Districts 101–103 purse seine fisheries, 2005.

Age-Specific Model Constructed		Stepwise Variable Selection		Misclassification Matrix				
				True Stock	Classified As (number and percent)			Total
Age Class	Run	Variable	F-Statistic		Alaska	Nass	Skeena	
12	Total	z4	314.26	Alaska	160	30	15	
	Season	z84	45.63		78.05%	14.63%	7.32%	205
		z72	10.73	Nass	24	126	50	
		z81	9.16		12%	63%	25%	200
		z1	6.46	Skeena	6	47	149	
		z77	6.03		2.97%	23.27%	73.76%	202
				Total	190	203	214	607
	13	Total	z4	250.25	Alaska	175	18	21
Season		z1	63.65		81.78%	8.41%	9.81%	214
		z83	42.78	Nass	12	134	31	
		z72	15.14		6.78%	75.71%	17.51%	177
				Skeena	28	38	138	
					13.73%	18.63%	67.65%	204
				Total	215	190	190	595
22		Total	z4	187.7	Alaska	127	8	11
	Season	z63	45.04		86.99%	5.48%	7.53%	146
		z71	28.07	Nass	13	163	23	
		z34	19.78		6.53%	81.91%	11.56%	199
		z82	8.02	Skeena	5	4	25	
					14.71%	11.76%	73.53%	34
				Total	145	175	59	379
	23	Total	z34	63.68	Alaska	111	21	21
Season		z4	23.06		72.55%	13.73%	13.73%	153
		z2	18.88	Nass	33	136	32	
		z87	14.66		16.42%	67.66%	15.92%	201
		z83	5.32	Skeena	3	5	14	
					13.64%	22.73%	63.64%	22
				Total	147	162	67	376

Appendix C.—Scale variables with associated entry F-statistics, and classification matrices for age-specific linear discriminant models used to classify sockeye salmon commercial catches in the District 104 purse seine fishery, 2005.

Age-Specific Model Constructed		Stepwise Variable Selection		Misclassification Matrix					Total
Age Class	Timing	Variable	F-Statistic	True Stock	Classified As (number and percent)				
					Fraser	Alaska	Nass	Skeena	
12	Total	z4	230.89	Fraser	114	7	24	27	
	Season	z76	44.62		66.28%	4.07%	13.95%	15.7%	172
		z74	33.7	Alaska	32	147	19	9	
		z2	29.62		15.46%	71.01%	9.18%	4.35%	207
				Nass	33	16	103	48	
					16.5%	8%	51.5%	24%	200
				Skeena	40	1	33	128	
					19.8%	0.5%	16.34%	63.37%	202
				Total	219	171	179	212	781
	13	Total	z4	181.97	Fraser	81	6	11	22
Season		z1	110.41		67.5%	5%	9.17%	18.33%	
		z84	29.72	Alaska	18	168	16	13	215
		z81	21.05		8.37%	78.14%	7.44%	6.05%	
		z72	15.87	Nass	5	10	136	26	177
		z77	15.76		2.82%	5.65%	76.84%	14.69%	
				Skeena	35	21	36	113	205
					17.07%	10.24%	17.56%	55.12%	
				Total	139	205	199	174	717
22		Total	z4	201.58	Alaska		119	6	21
	Season	z63	39.5			81.51%	4.11%	14.38%	
		z71	27.33	Nass		15	165	19	199
		z42	9.9			7.54%	82.91%	9.55%	
				Skeena		4	4	26	34
						11.76%	11.76%	76.47%	
				Total		138	175	66	379
23	Total	z34	61.27	Alaska		113	18	17	148
	Season	z4	24.25			76.35%	12.16%	11.49%	
		z2	20.3	Nass		34	138	29	201
		z87	18.23			16.92%	68.66%	14.43%	
		z82	5.53	Skeena		3	5	14	22
						13.64%	22.73%	63.64%	
				Total		150	161	60	371

Appendix D.—Scale variables with associated entry F-statistics, and classification matrices for age-specific linear discriminant models used to classify sockeye salmon commercial catches in the Districts 106 and 108 drift gillnet fisheries, 2005.

Age-Specific Model Constructed		Stepwise Variable Selection		Misclassification Matrix							
Age Class	Timing	Variable	F-Statistic	True Stock	Classified As (number and percent)						Total
12		z5	238.14	Alaska	163	16	4	18	6		
		z84	30.7		78.74%	7.73%	1.93%	8.7%	2.9%		207
		z72	19.07	Nass	8	98	41	31	22		
		z106	19.21		4%	49%	20.5%	15.5%	11%		200
				Skeena	1	31	124	16	30		
					0.5%	15.35%	61.39%	7.92%	14.85%		202
				Stikine	8	6	5	6	9		
					23.53%	17.65%	14.71%	17.65%	26.47%		34
				Tahltan	7	14	24	32	65		
					4.93%	9.86%	16.9%	22.54%	45.77%		142
				Tuya	187	165	198	103	132		785
					163%	16%	4%	18%	6%		207
				Total	78.74	7.73	1.93	8.7	2.9		
13		z2	319.95	McDonald	173	20	0	0	5	0	0
		z1	147.98		87.37%	10.1%	0	0	2.53%	0	0
		z4	40.53	Alaska	54	94	8	11	18	11	14
		z83	32.82		25.71%	44.76%	3.81%	5.24%	8.57%	5.24%	6.67%
		z71	30.37	Nass	0	9	105	26	26	2	9
					0	5.08%	59.32%	14.69%	14.69%	1.13%	5.08%
				Skeena	2	13	28	125	3	15	19
					0.98%	6.34%	13.66%	60.98%	1.46%	7.32%	9.27%
				Stikine	17	20	35	5	111	2	9
					8.54%	10.05%	17.59%	2.51%	55.78%	1.01%	4.52%
				Tahltan	0	6	5	15	2	120	55
					0	2.96%	2.46%	7.39%	0.99%	59.11%	27.09%
				Tuya	0	1	1	5	1	6	11
					0	4%	4%	20%	4%	24%	44%
				Total	246	163	182	187	166	156	117

-continued-

Age-Specific Model Constructed		Stepwise Variable Selection		Misclassification Matrix									
Age Class	Timing	Variable	F-Statistic	True Stock	Classified As (number and percent)							Total	
					McDonald	Alaska	Nass	Skeena	Stikine	Tahltan	Tuya		
22	Total	z5	273.4	Alaska		178	11			18			
						85.99%	5.31%			8.7%		207	
	Season	z71	164.68										
		z63	105.67	Nass		10	184			5			
		z58	20.71			5.03%	92.46%			2.51%		199	
				Tahltan									
				Tuya									
				Total		3	6			77		86	
	23	Total	z71	179.75	Alaska		141	33		23	12		
							67.46%	15.79%		11%	5.74%		209
Season		z63	20.09	Nass		31	142		20	8			
		z32	47.19			15.42%	70.65%		9.95%	3.98%		201	
		z72	6.8	Skeena									
				Stikine		1	1		14	0			
						6.25%	6.25%		87.5%	0		16	
				Tahltan		3	19		7	161			
						1.58%	10%		3.68%	84.74%		190	
				Tuya									
			Total		176	195		64	181		616		